NETWORK WORLD

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

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Banyan ENS to become NT, NetWare connectivity catalyst

BY CHRISTINE BURNS

Atlanta

Banyan Systems, Inc. this week is expected to announce a version of its Enterprise Network Services (ENS) for NetWare that supports the directory of NetWare 4.X as well as new client software that lets Windows NT clients play in VINES environments.

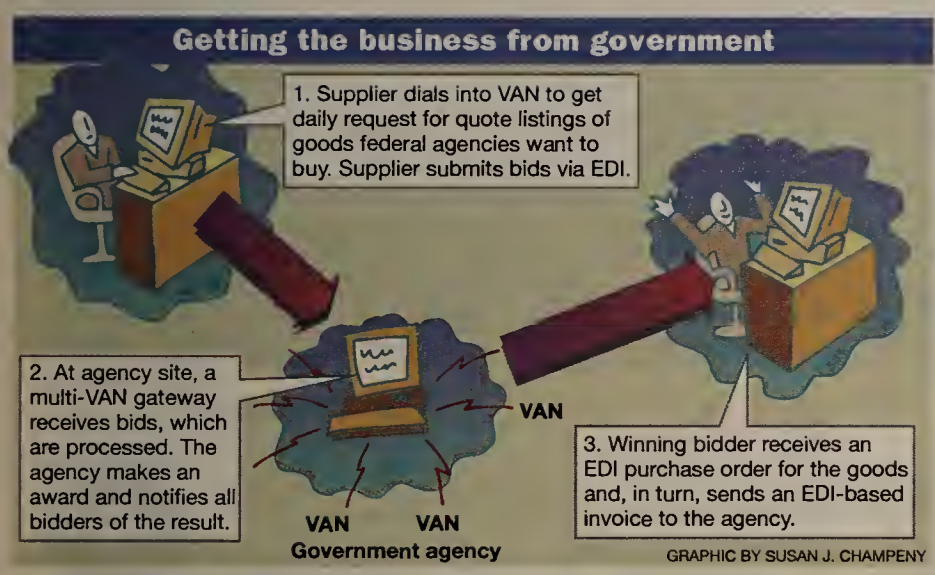
The company will also air plans for ENS for Windows NT, enabling users to deploy a common set of enterprise services across VINES, Windows NT, Novell, Inc. NetWare and Unix systems.

"Who else is offering a single source of integration for VINES, Unix, NetWare and Windows NT?" NetPro's Randy Bradley asked.

In addition, Banyan will officially unveil its next-generation enterprise messaging engine, called Intelligent Messaging III (*NW*, Feb. 14, page 4); a new version of BeyondMail that supports Intelligent Messaging III; and VINES 5.54, which supports new hardware platforms and new interfaces.

Banyan officials refused to comment on the announcement

See **Banyan ENS**, *page 59*



Feds finalize policy to spur electronic commerce

BY ELLEN MESSMER

Washington, D.C.

The Clinton administration next month will issue its long-awaited plan for spurring electronic commerce between the government and private sector, detailing a technical and policy framework for using electronic data interchange to automate purchasing.

The administration hopes to streamline some $20 billion annually in small purchases — government parlance for buys valued at less than $25,000. The plan will ask all defense and civilian agencies to set up EDI gateways where multiple value-added networks (VAN) can interconnect to let suppliers bid on contracts electronically.

"We're developing a government-wide architecture for bidders," said Steven Kelman, administrator for federal procurement policy at the Office of Management & Budget during last

See **Scheme**, *page 59*

NEWSPAPER

TOO

Net management group to push interoperability issue

BY JIM DUFFY

Carlsbad, Calif.

Users may soon have a powerful ally in their quest for integrated network and systems management.

The leading management application developers are banding together to press platform vendors to agree on a common method for storing and accessing management data. That could make it possible for users to share data among different management applications and platforms.

New version of NetView/6000 on the way from IBM. Page 8.

Peregrine Systems, Inc. and Ki Networks, Inc. are the ringleaders behind the Management Integration Consortium (MIC), an evolving group of vendors and users looking to tackle management application integration issues. In addition to Peregrine and Ki Networks, the group's 15-member steering committee — which is still coming together — may include IBM, Hewlett-Packard Co. and SunConnect, the leading management platform providers (see graphic, page 58).

Based on the idea that users buy management platforms because of the applications, the group is attempting to coerce the leading platform vendors into defining and supporting a single repository. This will enhance data sharing among management applications and increase the functionality of the platforms.

"If they don't [participate], then what does that say about them?" asked Jim Corrigan, president of Ki Networks. "What better way is there to guarantee success and simplify what you have to do?"

The game plan

Agree on a schema for the storage of management data in an SQL database.

▼

Define a "lightweight" API for accessing the database.

▼

Tackle a host of other management integration issues as they arise.

If the group is successful, applications written for OpenView,

See **Net management**, *page 58*

Financial firm finds frame relay in full bloom

BY DAVID ROHDE

New York

"I want to run video and audio to the customer's desk. How do we do that?"

That was the question put to network designer Leigh Reynolds last year by hard-charging Mike Bloomberg, founder of Bloomberg L.P., a New York-based company that feeds instant financial updates to money managers around the world. Bloomberg's plan is to provide customers with not only statistical information, but also audio and video clips gleaned from the company's radio and television stations.

Another engineer might have explained that only Asynchronous Transfer Mode (ATM) can handle that kind of voice, data and video traffic, and warned that trying to build an ATM net today is expensive and requires huge amounts of bandwidth.

But instead, Reynolds set to work fulfilling her boss' request with a private frame relay net — despite frame relay's reputation as a "data-only" protocol.

Slated for full rollout by July, the company's global frame relay network consists of 300 nodes that will feed financial updates and related news to 35,000 proprietary Bloomberg terminals on customers' desks.

"We have an X.25 packet-switched network, and we're running out of bandwidth," Reynolds said.

The X.25 network takes up too much overhead with error-correction routines and is too slow to provide enough data to customers, she said.

See **Frame relay**, *page 58*

CTI APPLICATIONS

Users hear plan for UnixWare on PBXs

BY DAVID ROHDE

Basking Ridge, N.J.

AT&T is quietly talking to users about porting Novell, Inc.'s UnixWare to its flagship Definity private branch exchange — a move that could position the PBX as a telephony server on NetWare LANs.

AT&T sales representatives have been telling customers that the plan could simplify deployment of computer-telephone integration (CTI) applications in a local-area network environment, and make it easier for users to manage Definitys and handle chores such as chargeback and call reporting.

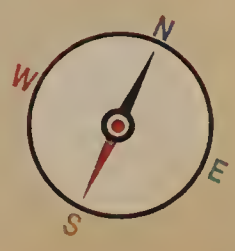
"There is an ongoing series of discussions regarding UnixWare applications running on or through the PBX," said Gene Webb, telecommunications man-

See **UnixWare**, *page 57*

Plotting a course with Novell's Navigator

Novell's software distribution package doesn't go far enough to meet the needs of enterprise nets.

See review, page 41.



Briefs

Where do we go from here? Even though MCI Communications Corp. now has two frame relay networks as a result of its recent acquisition of BT North America, Inc., a company official last week said MCI does not have any definite plans to merge the two. However, MCI will detail what plans it does have for integrating its network operations with those of BT North America's at the NetWorld /INTEROP 94 conference in Las Vegas next month. Analysts briefed by the carrier said MCI inevitably will merge its frame relay net with the newly acquired one and run them on a common platform along with the X.25 network MCI got from BT North America.

Jumping on the ISDN bandwagon. Seems like people just can't get enough of ISDN these days. Intel Corp. of Santa Clara, Calif., this week will introduce a local-area network adapter card that will enable remote personal computer users to access corporate LANs via Integrated Services Digital Network links. Further product details were not available.

Telephone numbers could cost you. Nothing comes for free anymore. The Federal Communications Commission last week sought comment on a proposal to fund a new North American Numbering Plan Administrator by charging a fee to those who are assigned telephone numbers. The FCC is examining the issue because Bell Communications Research earlier indicated it wants to resign as the numbering plan administrator. Comments are due by June 7.

The Americans are coming. Pretty soon, you'll be able to hear a pin drop all the way from London. Sprint Corp. last week became the first major U.S. long-distance carrier to be granted a domestic operating license in the U.K. The new license allows Sprint to build and operate its own network facilities in the U.K. and gives Sprint full interconnection rights with British Telecom.

Let's Make a deal. IBM and Make Systems, Inc. are expected this week to announce that IBM will add Make's new NetMaker XA network design tool to its NetView/6000 management platform. This will allow NetView/6000 users to determine the financial and performance impact of network reconfigurations before actually redesigning their networks. NetMaker XA is a new object-oriented version of Make's network design and simulation software.

Help me dial this thing. A new AT&T business unit, AT&T WorldPlus, Inc., plans to turn on a unified set of global telecommunications services today so "travelers won't have to relearn how to use a phone every time they cross a border," said Joseph Nacchio, president of AT&T Consumer Communications Services.

To use the WorldPlus Communication Service, customers dial a toll-free access number and enter an account number and personal identification number to access voice, messaging, and broadcast facsimile, conference calling and other services in 40 countries via a personalized menu. The service costs $70 a year plus $1.99 to $3.99 per minute, depending on where calls originate.

Big deals for Amtrak and Chase. Amtrak last week awarded IBM's outsourcing unit a 10-year, $500 million contract to run the railroad company's enterprise network. The contract covers data center management, disaster recovery, help desk operations and networking.

Separately, The Chase Manhattan Bank, N.A. last week turned over the operations and management of its telecommunications network to AT&T's Accumaster Management Services group, which will assume ownership of the bank's network assets and offer employment to Chase's technical staff.

Contacts

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Can you identify informational resources about protecting computer nets from hackers within and outside of an organization? The information needs to cover a wide variety of platforms.

Jeremy Smith, Laguna Hills, Calif.

Jonathan Wheat, a security consultant at the National Computer Security Association (NCSA), a Carlisle, Pa.-based organization that actively promotes security awareness to microcomputer and network users, replies:

There are a number of books and reports about network security for a wide variety of platforms. Some books you may want to consider are: *Network Security Secrets* by David Stang and Sylvia Moon (IDG Books); *Protecting Information on a Local Area Network* by James Schweitzer (Butterworth-Heinemann); *Network Security in the 90s* by Thomas Madron (John Wiley & Sons, Inc.); *Complete Book of PC and LAN Security* by Stephen Cobb (McGraw-Hill, Inc.) and *Unix Installation, Security and Integrity* by David Ferbrache and Gavin Shearer (Prentice Hall Computer Publishing).

Also, you might be interested in these research reports: "NetWare Security: Configuring and Auditing a Trusted System" by Jason Lamb of Novell, Inc.; "Network Security: Issues, Vendor Solutions, Practical Experience" by Andrew Wolfe, Jr. of Patricia Seybold Group, Inc.; and "Setting up NetWare Security" by LearnKey, Inc. To purchase any of these materials or to receive NCSA's free "Information Security Catalog," which contains a complete listing of security books, reports, prices and conference proceedings, call (717) 258-1816.

Do you know of any firms offering wireless satellite connections to a news feed, which let users access the Internet news groups?

Paul Wareham, Kingston, Ontario

See Help desk, *page 40*

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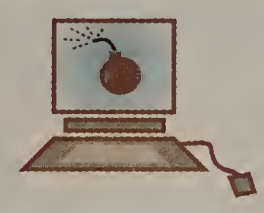

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COMING APRIL 25...

In the second part of the series that examines doing business on the Internet, *Network World* explores the security issues of setting up shop on cyberspace.

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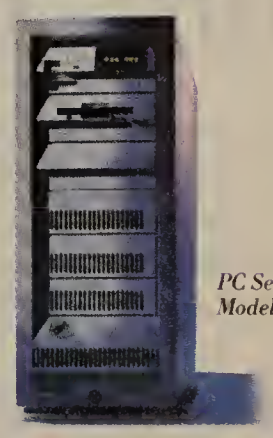

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IBM melts down the big iron; new servers rise from the ashes

BY MICHAEL COONEY

New York

IBM last week embarked on an aggressive bid to change the face of enterprise networking and stave off the extinction of the mainframe.

The firm introduced its System/390 Parallel Sysplex line of low-cost microprocessor-based parallel processing mainframes it will position as superservers for large networks. The new iron will ultimately be able to support local-area network traffic without the aid of expensive front-end processors or LAN gateway controllers such as IBM's 3172 box.

IBM also added automated net management applications that will help users centrally manage widespread LAN environments.

The new parallel processing hosts are based on existing S/390 technology. Each unit houses a minimum of two microprocessors, 128M bytes of memory, three channel connections and one coupling link for connectivity to other parallel boxes.

The devices are compatible with IBM's current S/390 line, meaning users can run existing S/390 software with little or no change. Existing IBM Enterprise Systems/9000 711 and 211-based mainframes can be clustered with the new Parallel Sysplex models.

Because these boxes and their software are expected to be significantly less expensive and mainframe users can migrate to them without much trouble, the announcements change the rules of the downsizing ball game, said Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C.

S/390 Parallel Sysplex technology will allow users to strap together as many as 32 MVS systems and run them as one big unit.

A new version of MVS, MVS/ESA SP Version 4, will control the parallel processing boxes. New versions of IBM's primary transaction processing applications — CICS and IMS — and its mainframe-based security program, Resource Access Control Facility, complete the Parallel Sysplex family.

NEW VTAM

Key to making the Parallel Sysplex go, however, is the S/390 Coupling Facility 9674 Model 1 and VTAM 4.2, which will make it possible to link the new mainframes and share data. The 9674 box uses fiber-optic couplers to connect participating processors in the Sysplex.

VTAM is normally the traffic cop for communications flowing into a single mainframe. Its role in the Parallel Sysplex environment is expanded to controlling access to the applications available in a system configured with multiple processors.

Big Blue product review

Product	Due	Price
S/390 Parallel Transaction Server	June	NA
S/390 Parallel Query Server	3Q	NA
S/390 Coupling Facility 9674 Model 1	June	NA
CICS/ESA SP Version 4	4Q	NA
IMS Version 5	4Q	NA
DB2 Version 3	NA	NA
DB2/6000 Parallel Edition	NA	NA
VTAM 4.2	3Q	NA
Automated Operations Network/MVS		
Base product	June	$5,090-$19,325
SNA feature	June	$6,015-$22,840
LAN feature	June	$6,015-$22,840
TCP/IP feature	June	$1,850-$7,030
Enterprise Performance Data Manager/MVS		
SP400 feature	June	$2,315-$8,785
SP6000 feature	June	$2,315-$8,785
EPDM Capacity Planner	June	$6,475-$24,595

GRAPHIC BY TERRI MITCHELL

NA = Not available

VTAM 4.2, which will not be available until later this year, utilizes the dynamic topology, directory and routing services of IBM's Advanced Peer-to-Peer Networking (APPN) technology to automatically locate resources regardless of their location within the Sysplex, said Gary Burnette, manager of VTAM strategy. VTAM 4.2 will automatically reroute around a failed application and balance traffic loads among the different applications in the Parallel Sysplex environment.

Also of interest to net managers, IBM issued a statement of direction that promised to add an Open Systems Adapter (OSA) that would let users link Fiber Distributed Data Interface, Token-Ring and Ethernet LANs directly to the Parallel Sysplex machines without requiring a 3172 Interconnect or 3745 controller.

"It's not uncommon for IBM to put integrated controller/adapters in low-end mainframes [like the 9370], but it isn't smart for IBM to not have OSA in there from Day One," said Anura Guruge, an independent analyst in New Ipswich, N.H. No other details on the

See **IBM**, *page 8*

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Tough week for deals in telecom world

BY JOANIE WEXLER

Last week saw more fender benders on the emerging Information Superhighway, this time involving Southwestern Bell Corp. and former ally Cox Enterprises, Inc., as well as would-be merger mates AT&T and McCaw Cellular Communications, Inc.

But observers say the mishaps are unlikely to halt the industry convergence that has grabbed headlines in recent months.

Southwestern Bell and Cox quashed plans for a $4.9 billion joint interactive services venture, blaming their separation on the Federal Communications Commission's recent move to cut cable rates by 7%, which devalued Cox to the Bell company.

Bell Atlantic Corp. and Tele-Communications, Inc. also cited that decision last month as a key factor in the demise of their proposed $16 billion merger.

Meanwhile, U.S. District Court Judge Harold Greene told AT&T and McCaw last week that he would not grant the merger-minded companies an expedited waiver from divestiture sanctions blocking AT&T from investing in its former operating companies. Many Bells own parts of McCaw.

The fallout of that decision is unclear, depending on if and when a waiver is granted. Joseph Nacchio, president of AT&T Consumer Communications Services, said, "Our counsel felt this is not a legal setback."

But while regulatory hurdles may have tempered enthusiasm for joint ventures, they are not likely to drive combined infrastructure efforts into a ditch, analysts said.

Southwestern Bell and Cox may not reunite, but telephone-cable deals are inevitable, said Robert Rosenberg, president of Insight Research Corp., a consulting firm in Livingston, N.J. The reason: The communications industry is merging, both in transport and in content, or the information it delivers.

And despite regulatory opposition, clashing corporate cultures and different concepts of service quality, these firms may have no choice but to pair.

"The ideal network is superior to what either the phone company or cable nets offer today," said Philip Evans, a vice president with Boston Consulting Group, Inc., at a recent conference his firm hosted in Boston.

Today, local telephone companies run primarily narrowband switched networks that support two-way, point-to-point connections. The cable nets are unswitched and one-way, but have more capacity overall.

Boston Consulting estimated a $4,700 per-household cost for telephone and cable to separately build new nets. With approximately 100 million households in the U.S., the resulting $470 billion price tag would dwarf the $10 billion to $30 billion the firm identified in potential new revenue from an interactive broadband infrastructure.

But while convergence may be inevitable, observers are still rankled by what they view as government interference.

"I'm a great believer in a free market," said Douglas Williams, senior vice president and technology executive at The Chase Manhattan Bank, N.A. in New York. "When government gets involved, things don't work."

"Judge Greene has been a bugaboo for the communications industry for years; he's no one's friend on the local or interexchange side," Rosenberg added.

But several telecommunications bills are pending in Congress (see stories, page 25) that would basically rewrite the rules and open up competition.

Not according to plan

Alliances between some of the largest telecommunications vendors may be essential to create the Information Superhighway, but regulatory issues, divergent corporate cultures and other factors are getting in the way.

Partners	Relationship	Value	Announced	Status
AT&T and McCaw	Proposed merger	$12.6 billion	August 1993	Were refused an expedited waiver last week from some AT&T consent decree restrictions.
Southwestern Bell and Cox	Partnership	$4.9 billion	December 1993	Called off on April 5.
Bell Atlantic and TCI	Proposed merger	$16 billion	October 1993	Called off on Feb. 23.
US West, Inc. and Time-Warner, Inc.	Partnership	$2.5 billion	May 1993	Interactive service trials are behind schedule.
BCE, Inc. and Jones Intercable, Inc.	Partnership	$400 million	November 1993	BCE recently renegotiated a reduced investment in Jones Intercable.

GRAPHIC BY TERRI MITCHELL

Lotus, users track down problems with Notes gateway

BY ADAM GAFFIN

Cambridge, Mass.

Lotus Development Corp. said last week it is close to squashing a series of bugs plaguing users of its OS/2-based Simple Mail Transfer Protocol (SMTP) gateway for Notes.

These bugs can result in messages being sent out without proper return addresses and incoming messages getting stuck in the SMTP server until somebody manually resets the gateway.

The gateway, released last fall, is designed to let Lotus Notes users exchange messages with users of other electronic mail systems over an SMTP network, notably the Internet. The gateway handles translation between the message formats.

Gail Shlansky, Lotus' product manager for messaging and gateways, acknowledged the problems with the gateway and said Lotus hopes to distribute a list of temporary fixes for the bugs via the Internet this week.

"We're working really aggressively [to fix the problems]," she said. "We realize the situation is unmanageable for a lot of our customers who were really counting on this [gateway]."

Lotus has developed permanent fixes for most of the problems and will include them in a new release, Shlansky said. However, the company will not ship a new version until after it finishes working with IBM to fix bugs caused by the way OS/2 handles large numbers of files. Releasing a new version with only a partial fix might cause a new set of problems for users, she said.

A version of the gateway for SunSoft, Inc. Solaris servers, expected to be released by the end of the month, will incorporate all of the fixes, she said.

Duffy Mazan, a partner with Electric Press, Inc. of Reston, Va., said he began noticing problems within 10 minutes of installing the gateway in January. Probably the largest headache was the software's inability to properly address outgoing mail from Notes networks with more than one domain, which means that recipients who try to respond will either have their mail bounced back to them or sent to the wrong person, he said.

The gateway also has a propensity to stop processing inbound messages if more than a handful come in at the same time, Mazan said. It then starts a process that can result in the creation of hundreds of useless temporary files, as well as the routing of messages into files marked as bad, he said.

Electric Press, a service bureau that helps other companies distribute catalogs and other information over the Internet, has since developed its own temporary fixes for the problems.

"None of them are very satisfactory," he said.

For example, Electric Press's SMTP server is now timed to process messages every two minutes, in the hope there will never be more than a few messages in the queue at one time, he said.

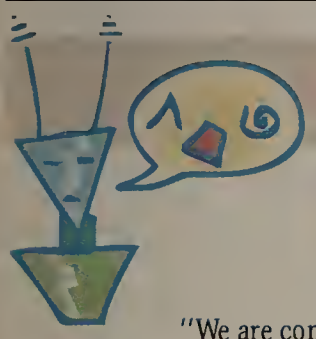
Monitoring software was installed to notify technicians whenever the processing goes awry so they can manually restart it.

Fixing the addressing problem involved creation of a text file, accessible to OS/2's sendmail program, that lists every Notes user and associated domain addresses.

Mazan questioned why Lotus released such a buggy application in the first place and said he was unable to get any satisfactory answers from Lotus.

Shlansky, however, said she was unfamiliar with Mazan's problems until contacted by *Network World*. She said she would call him to discuss possible solutions, as she said Lotus has done with other users.

Ironically, Mazan said the problems have helped his business. Customers who do not want to deal with the bugs have been asking to route their messages through Electric Press's gateway.



CyberSpeak: *Voices from the reader network*

In light of Novell buying WordPerfect and Borland's spreadsheet unit, will you look to Novell for network applications?

"We are committed users of NetWare, Quattro Pro and several WordPerfect products. However, for us to remain loyal Novell application users, Novell will have to increase integration between applications as well as between NetWare and the applications.

Also, Novell will have to offer a higher level of support for its applications than it currently offers on NetWare.

Sandro Silvestri, director of administrative data and voice communications, Henry Ford Community College, Dearborn, Mich.

"WordPerfect offers the quintessential word processing power software. I [credit the software maker with helping me] move up the corporate ladder from secretary to word processing specialist to software integration specialist and now to MIS director. I applauded Novell's business savvy in acquiring SoftSolutions and Borland's [spreadsheet product]. I believe any entity that associates with WordPerfect will reap its benefits. In this sense, WordPerfect has the Midas touch. I will continue to support WordPerfect by following its vision into the future."

Celia Banks, network manager, Haythe & Curley, New York

"I don't foresee many companies looking to Novell for network applications, especially when those companies already have software in place. It is going to be very difficult for Novell to overcome the inertia of existing products in most companies. The only way I would even consider throwing out my old Microsoft applications for new Novell/WordPerfect applications is if they gave them away. Otherwise, the cost in installation, troubleshooting and retraining would eliminate any technical benefits for years to come."

Douglas Welch, senior microcomputer analyst, Los Angeles

NextWeek CyberSpeak Out!

The federal government is making more noise about going after Microsoft for alleged anticompetitive behavior. Do you think Microsoft abuses its market power?

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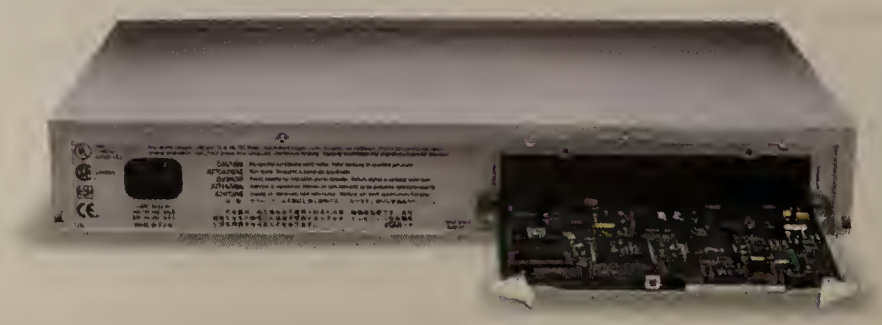

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NETWORLD INTEROP 94

- Full stack manageable via a single SNMP module
- Supports HP OpenView network management software
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Microsoft hopes to score touchdown at EMA show

BY ADAM GAFFIN

Anaheim, Calif.

Next week's Electronic Messaging Association (EMA) conference here should provide a boost for Microsoft Corp.'s enterprise messaging strategy as Microsoft and a host of partners begin demonstrating products that incorporate key elements of the plan.

Isocor, the Los Angeles-based X.400 vendor, will discuss its plans to port Microsoft's Messaging Application Programming Interface (MAPI) to Unix, which promises to let Unix applications access Microsoft's messaging back end. The company will also display its Windows-based MAPIware groupware software.

David Knight, Isocor's vice president for marketing, said the firm is talking to vendors about integrating their products with MAPIware, which will provide the beginnings of a universal in-box system. MAPIware could roll out this month, with per-user pricing ranging from $50 to $500. Unix support for MAPI, combined with Apple Computer, Inc.'s plan to back MAPI, should help Microsoft provide enterprise messaging capabilities, said Dan Blum, principal at Rapport Communication, a consulting firm in Takoma Park, Md.

MAPI is one of three core components of Microsoft's Information Exchange strategy. The others are its impending Touchdown messaging server and MAPI-based mail clients to be implemented in future versions of Windows. In his EMA keynote address, Microsoft Chairman Bill Gates is expected to argue that the combined technologies create a rich platform for new messaging-based applications.

Blum said Microsoft's strategy has an excellent chance of success due to MAPI's robustness.

Some observers said Microsoft may also demonstrate software, code-named Goal Line, that will let users of existing Windows 3.X mail clients use some Touchdown services. Microsoft will position this software, which will include enhanced forms routing and a file server architecture, as a migration path for companies with large installed bases of Microsoft Mail.

AT&T may discuss plans for a proposed national network with Microsoft that would link Windows users, via their MAPI clients, to AT&T servers providing a variety of information services.

Blum said Microsoft's strategy has an excellent chance of success, in large part due to MAPI's robustness.

"It looks like VIM is all but failed now," Blum said of the Vendor Independent Messaging API pushed by Lotus as the way to connect desktop applications to messaging systems.

But Susanna Opper, president of Susanna Opper and Associates, a groupware consulting firm with offices in Alford, Mass., and New York, said Microsoft's strategy fails to address the real reason for Notes' popularity — the conferences that let workgroups collaborate and share information.

"Could you build a better Lotus Notes

See **Microsoft,** *page 57*

IBM prepares for next review of NetView/6000

BY JIM DUFFY

Raleigh, N.C.

IBM will soon begin beta tests of a new NetView/6000 release that supports multiple relational databases, fail-over capabilities and enhanced discovery features.

NetView/6000 is IBM's Simple Network Management Protocol (SNMP)-based management system. It automatically discovers and maps Internet Protocol nodes, and performs fault, performance and configuration management of those devices.

Currently, NetView/6000 supports an Ingres relational database and a flat file database for storing management information used to build the maps and report events. But the next release will support Oracle Corp., Informix Software, Inc. and Sybase, Inc. databases, as well as the Ingres product.

With this enhancement, users will be able to select the database of their choice for storing IP topology and SNMP TRAP data. The new release will also include a feature that allows users to easily migrate their existing flat file structures to the relational model, according to an IBM document obtained by *Network World*.

IBM is expected to disclose its NetView/6000 directions at the NetView Association vendors' meeting here this week.

ADDITIONAL FEATURES

Other enhancements include a so-called manager takeover capability, which enables one NetView/6000 console to take over the operations of another in the event of a failure. The new release will feature wider discovery features, including the ability to determine more data about bridge and router interfaces. It will also automatically discover Systems Monitor agents.

Systems Monitor agents reside on all managed systems, databases and applications. The software monitors these resources, reports information back to NetView/6000 and responds to commands issued from a NetView/6000 console.

IBM is also upgrading NetView/6000's event management capabilities. Upgrades include the ability to sort events from multiple workspaces, which will allow users to more quickly pinpoint the cause of a fault. Workspaces are groupings of network resources, based on particular characteristics, that are represented as icons on a graphical user interface.

Lastly, the next NetView/6000 release will include a systems performance monitoring tool and generic topology application program interfaces (API). The tool will let users survey the operation of Systems Monitor agent-equipped devices, and the APIs will let NetView/6000 applications collect, store and retrieve topology data on managed nodes.

"The topology manager is one of their leading-edge pieces that allows them to incorporate information from Novell [NetWare], SNA and DECnet into a common repository," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

An IBM spokeswoman declined to comment on the announcements or a delivery date for the new version.

IBM

Continued from page 4

OSA adapter were available.

To help manage the new environment, IBM rolled out three new versions of its existing enterprise management applications.

Automated Operations Control/MVS Release 3 combines three previously separate offerings — CICS, IMS and Operations Planning and Control Automation — into one package.

Working with NetView, IBM's host-based net management platform, AOC/MVS recognizes the new Parallel Sysplex resources and can automatically start up, shut down or recover CICS and IMS regions and sessions with those applications.

NetView operators can also use AOC/MVS to monitor the work load and status of the resources in the enterprise from one NetView screen.

To improve network recovery, IBM announced Automated Operations Network/MVS, which lets users automate responses to network problems such as device failures. AON/MVS supports users on Token-Ring and Transmission Control Protocol/Internet Protocol LANs, as well as users in X.25, Systems Network Architecture/3270 and APPN environments.

Users can buy the SNA, TCP/IP and Token-Ring features as separate items or have them work together as one, said Tom Aspden, product development manager for AON/MVS. AON/MVS replaces the existing Automated Network Operations/MVS product, which did not support APPN nets.

AON/MVS works by intercepting messages, alerts or alarms coming to NetView from downstream devices. It then automatically tries to recover failed devices and keeps track of their status on a NetView screen.

For managing distributed nets of Application System/400 mid-range and RISC System/6000 workstations, IBM announced Enterprise Performance Data Manager/MVS. EPDM works by monitoring AON/MVS, ANO/MVS, or AOC/MVS for AS/400 or RS/6000 traffic. If an AS/400 or RS/6000 fails or performance begins to falter, EPDM can kick off an automated response to the problem. For example, if an AS/400 node fails, EPDM can automatically restart the device from the central location without operator intervention.

DISTRIBUTED DATABASES

Sybase allies with systems mgmt. vendors

BY PETER LISKER

Emeryville, Calif.

Sybase, Inc. has announced alliances with two systems management companies for products that could simplify management of distributed databases.

Sybase will co-market Compuware Corp.'s EcoTools Version 2.1, which will be tuned within 30 days to support Version 4.9 of Sybase SQL Server, as well as the System 10 release. The companies will add capabilities for fault and performance monitoring, as well as automatic detection of database failures.

BMC Software, Inc. will port its Patrol software to the Sybase platform. Patrol handles change and object management, and provides system administration, maintenance and recovery facilities.

The moves widen the options for Sybase users who have had to rely on Sybase SQL Monitor and System Administration (SA) Companion to monitor and control their databases.

"Sybase is realizing that complete systems management is a critical component of the marketing and sales effort, and that the Sybase tools were inadequate to monitor end-to-end database performance," according to Richard Finkelstein, president of Performance Computing, Inc., a database consulting company in Chicago.

"Customers will now be able to integrate database management into a systems management structure that was sadly lacking prior to these announcements."

"While we've been happy with Sybase's management tools, we have also discovered that they only allow us to track and monitor the database performance itself," said Michael O'Cone, manager of marketing strategies, systems and programming for Ortho-McNeil Pharmaceuticals Corp. in Raritan, N.J. "We've expressed our concern over this issue to Sybase and are gratified that they've chosen to ally their products with BMC and Compuware."

The Compuware alliance will bring automatic event reporting and corrective capabilities to the Sybase arena. EcoTools is designed to provide performance monitoring to Unix and Transmission Control Protocol/Internet Protocol networks.

The BMC connection will provide not only additional systems management features, but will offer tools for users with Sybase systems in an IBM Systems Network Architecture environment. BMC products under the Patrol family monitor the efficiency of operational client/server systems and are used by corporate users to track database and data communications subsystems' performance.

In February, Sybase joined the SNMP Management Information Base group, which is trying to bring Simple Network Management Protocol management to the database arena. Sybase also has an alliance with Tivoli Systems, Inc. for its management software.

Sybase: (510) 922-3500.

Sybase systems management milestones

June 1991	Introduces Sybase SA Companion and Sybase SQL Monitor management products.
November 1992	Allies with Tivoli for object management.
January 1994	Joins SNMP MIB working group.
April 1994	Forms alliances with BMC and Compuware.

GRAPHIC BY SUSAN J. CHAMPENY

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Options arise for end-to-end ATM across LANs and WANs

BY SKIP MACASKILL

End-to-end ATM networking will begin to come into focus this week when a handful of companies detail how they will allow users to create ATM enterprise internets by linking ATM local-area networks across a wide-area network.

NetEdge's ATM Connect 1.1 software features

- Virtual networking capability
- ATM Security Protocol
- Serial port load balancing
- 10Base-FL support
- Station Management Protocol 7.3
- Bridge Management Information Base
- Spanning Tree Protocol

NetEdge Systems, Inc., a start-up that provides a bridge/router to link traditional LANs with Asynchronous Transfer Mode nets, will release a new version of software for its device that allows users to create virtual LANs that span the enterprise as well as route traffic between virtual workgroups.

In a separate action, SynOptics Communications, Inc. and StrataCom, Inc. will announce a strategic alliance to cooperatively develop products that will allow users to interconnect local ATM networks across ATM-based WANs using switched virtual circuits (SVC).

"End-to-end ATM connectivity across the enterprise will be important to us as ATM takes hold," said NetEdge user Richard Smith, director of technical and network services for the Methodist Hospitals of Memphis health care consortium in Memphis, Tenn.

"The physicians currently use our FDDI network to move medical images — such as CAT scans and X-rays — among the four hospitals in the city for consultative reasons," he added. "Once we start installing ATM this summer and they see the added benefits of that, I know they'll want to extend the capabilities across the country and confer with other physicians."

NETEDGE

When NetEdge first rolled out its ATM Connect bridge/router earlier this year (*NW*, Jan. 24, page 19), it gave users the ability to link Ethernet, token-ring, Fiber Distributed Data Interface and ATM LANs, letting them create virtual workgroups comprising people from the different environments.

With Release 1.1, NetEdge will now let users extend those virtual LANs across the wide area, meaning LAN users on either side of the WAN cloud can be grouped together logically on the same network.

In order to transmit traffic between virtual LANs, NetEdge also added routing functionality, which will enable traffic from one virtual LAN to be routed to another virtual LAN across an ATM internet.

Unlike traditional routers that can only support one network address per port, ATM Connect can support up to eight net addresses per port, which has a twofold benefit for users, according to Al Bender, president and chief executive officer at NetEdge.

"Since net managers can group users in enterprisewide virtual LANs, it doesn't matter where or how a user is actually connected to the network," he said. "And by supporting multiple addresses at each port, we limit that restriction even further because end nodes with different IP addresses can share the same piece of wire going into an ATM Connect port. This will ease the burden of moves, adds and changes."

The multiaddress capability also reduces the need to purchase more routers to support the additional ports required to bring new networks into the enterprise.

ATM Connect will determine whether to bridge or route traffic on a per-port basis, automatically bridging packets destined for the same type of remote network and routing all others. Besides supporting 45M and 155M bit/sec ATM links, the router also supports up to four serial line connections at T-1 speeds.

Release 1.1 will be available next month as a free upgrade.

LATEST PARTNERSHIP

SynOptics and StrataCom meanwhile have forged a four-part development plan that will make their respective ATM

See **ATM options**, *page 57*

Wellfleet, Cabletron lead remote access product parade

BY SKIP MACASKILL

Networking users have many legitimate complaints, but a lack of remote network access options is certainly not one of them.

In recent months, vendors have rolled out a variety of solutions for linking remote site and branch office users into corporate nets. That trend continues with Wellfleet Communications, Inc., Cabletron Systems, Inc., Develcon Electronics, Ltd. and Retix unveiling new or enhanced remote access tools.

Users welcome this activity because a competitive market means lower prices, which translate into wider deployment. Greg Cooper, data communications manager at Watchtower Bible & Tract Society of New York, Inc. in Brooklyn, N.Y., for example, had to rely on courier services and electronic mail to communicate with more than 100 branch offices.

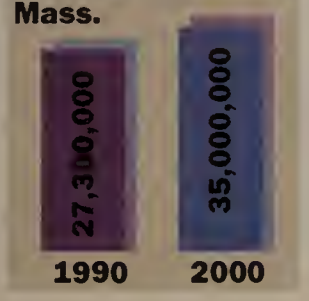
"Remote access technology will make my remote PCs — which have operated as standalone devices — more productive," he said. "It just wasn't cost-effective until recently to give them access to corporate resources."

Watchtower was a beta-test site for Wellfleet's new Access Node (AN) router, which provides a single Ethernet or token-ring interface along with two synchronous connections or one synchronous and one Integrated Services Digital Network Basic Rate Interface connection.

Users can tailor the AN's software to support different protocols and functions. The Basic Access package supports the Internet Protocol and complete bridging, while the IP Backbone package adds support for Data Link Switching (DLSw) and X.25. The Corporate Software package supports Wellfleet's entire software suite.

The synchronous interfaces, which can operate at speeds up to 2.048M bit/sec, will support frame relay, X.25, Switched Multimegabit Data Service, Point-to-Point Protocol and dial-up services. One of the connections may be used as a Synchronous Data Link Control port, letting Systems Network Architecture and multiprotocol local-area net traffic be consolidated over a single backbone link via DLSw, SDLC-to-Logical Link Control 2 conversion or synchronous pass-through.

The worldwide mobile work force, which in 1990 included 27.3 million people, is expected to top the 35 million mark by the year 2000, according to International Data Corp., a market research firm in Framingham, Mass.



The routers also ship with three utilities — EZ-Install, EZ-Configure and EZ-Update — designed to ease installation, configuration and software updates. AN ranges in price from $2,295 to $3,795, depending on configuration.

In other action:

- Cabletron will announce this week that it has codeveloped a module for its Multi Media Access Center hub that will support as many as 12 integrated V.32bis modems, letting remote terminals and serial devices be connected directly to Ethernet, token-ring or Fiber Distributed Data Interface corporate LANs. The module, developed with Xylogics, Inc., will be available in 90 days for $1,495.
- Develcon last week rolled out the Orbitor 3000 Remote Ethernet Bridge/Router, which provides one LAN interface and two wide-area network ports supporting switched digital services at up to 512K bit/sec. Providing features such as time-of-day routing and automatic dial backup, the 3000 is priced starting at $2,495.
- Retix jumped into the remote access fray with two new models in its RouterXchange (RX) 7000 line. The RX 7260, which is available now and costs $5,195, supports one Ethernet or token-ring interface and three WAN ports. The RX 7240, available in June and priced at $3,595, offers the LAN interface and one WAN port. Each can also be outfitted with a $1,650 12-port 10Base-T hub card.

Software AG intros database access tool

BY PETER LISKER

Reston, Va.

Software AG of North America, Inc. will introduce today a new graphical desktop tool that automatically generates SQL code for querying a wide variety of databases.

Esperant, a Windows-based client software package, uses artificial intelligence to formulate SQL query statements that analysts said fetch more accurate data than has been accessible via other graphical query tools.

"Esperant is very important because it's the first tool that accurately generates SQL code for the user who doesn't know or understand the underlying database structure," said John Rymer, editor of "Distributed Computing Monitor," a monthly newsletter published by the Patricia Seybold Group, Inc. in Boston.

While database query tool usage is growing rapidly, Esperant is "the first product that not only delivers ease of use, but also ensures correct query results," Rymer said.

Esperant pricing

Esperant costs $595 per user for one to eight users, or as little as $335 per user for 513 to 1,014 users. The LAN version of the product costs $3,750 for a LAN with one to eight users; a version for a larger LAN, supporting 129 to 256 users, costs $79,970.

For database administrators, Esperant promises to reduce the amount of time they need to spend with end users developing query applications.

"Esperant is really the first tool we've seen that eliminates, or at least minimizes, the need for an end user to consult with the database administrator to retrieve database information," said John Logan, executive vice president at Aberdeen Group, Inc., a Boston-based consulting firm.

The heart of Esperant is a patent-pending AI engine created by Software AG dubbed Esperant SQL Expert, which monitors every step of the query building process. SQL Expert translates the end-user query into semantically correct SQL for accessing database information from multiple databases.

Users operate Esperant via a point-and-click menu that prompts the user to select information desired from the databases. The chosen queries are presented to the user in concise English statements for approval before the SQL code is generated by the program. Esperant code will not let a user specify illogical or illegal query constructs, automatically graying out entries that violate SQL restraints.

The resulting SQL code then traverses the network, arrives at the database server for processing and returns the resulting data to the user. Software AG provides application program interfaces that give Esperant-generated queries access to most popular databases, including those from ASK Group, Inc., Digital Equipment Corp., IBM, Informix Software, Inc., Oracle Corp., Sybase, Inc. and Software AG itself. Any Microsoft Corp. Open Database Connectivity-compliant database or file system is also supported.

Another interesting feature of the Esperant product is that it automatically generates an audit trail for database administrators by storing the SQL query at the client machine. The audit information can then be collected at the server database for use in other applications. The SQL code can then be embedded into other application programs or distributed over the network to users with similar query needs.

✆Software AG: (800) 423-2227.

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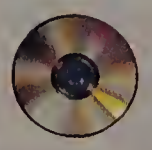

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CrossComm to throw its hat into remote router ring with internetworking products

BY SKIP MACASKILL

Marlborough, Mass.

And the beat goes on.

CrossComm Corp. this week will become the latest router vendor to introduce remote access devices when it rolls out four new products designed to ease the integration of branch offices into enterprise environments.

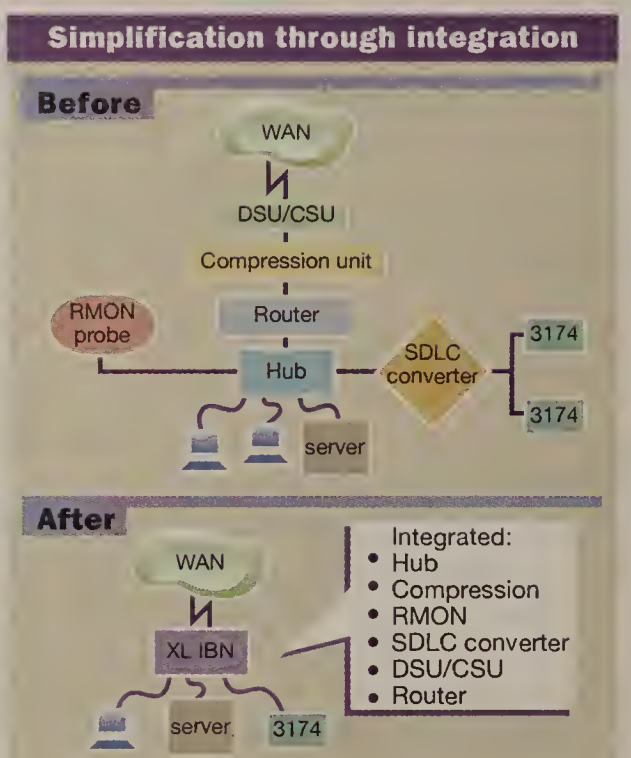
The company will unveil three remote routers — the XL10, XL5 and XL2 — to address office networks of various sizes, as well as its Integrated Branch Node (IBN) product, which combines the functionality of six different devices into one platform.

CrossComm, which specializes in internetworks for Systems Network Architecture traffic, needed remote routers to round out its product line, according to analysts.

"If CrossComm is going to be the specialist in the SNA arena, then it needs to be everywhere that SNA is, especially in the remote office environment where SNA is prevalent," said Glenn Gabriel Ben-Yosef, a senior analyst at The Yankee Group, a consultancy in Boston.

The centerpiece of the new products is the IBN, which offers router, hub, data service unit/channel service unit (DSU/CSU), compression, Remote Monitoring (RMON) and Synchronous Data Link Control conversion capabilities in the same box.

It integrates a 16-port multistation access unit (MAU) with a router that supports one token-ring local-area network interface and two wide-area interfaces that operate at up to T-1 speeds.



Through its IBN product, CrossComm integrates six functions into one device, eliminating the need to maintain and manage a variety of stand-alone boxes at remote sites.

SOURCE: CROSSCOMM, MARLBOROUGH, MASS.

While integrating all that functionality does create a single point of failure, CrossComm President and Chief Executive Officer Tad Witkowitz said, "We've minimized the impact of failure by eliminating several common problem areas of the typical configuration.

"Users, for example, don't have to worry about or manage cable connections between individual devices," he said. "If a problem does arise, the user only has to troubleshoot one device instead of six, and if one function does fail, it will not affect the operation of the other pieces of the IBN."

The IBN, like the new XL devices, will also support a dial backup connection via an integrated modem that provides 28.8K bit/sec of throughput in the event of a primary link failure.

The hardware portion of the IBN costs $5,995, while the basic software — which includes support for the Internet Protocol, Novell, Inc.'s Internetwork Packet Exchange (IPX), X.25 and frame relay protocols — goes for $1,500. Adding RMON to that mix will cost an additional $1,000. All components are available immediately.

LOW-END XLS

The lower end XLS line includes the new, two-slot XL10, which comes standard with an Ethernet or token-ring LAN interface and can support as many as three WAN ports via two routing modules. Customers can also configure the device

See **CrossComm**, *page 19*

Simpact adds to Freeway gateway line

Low-end version targets remote sites in financial services, defense markets.

BY JIM DUFFY

San Diego

Simpact Associates, Inc. last week unwrapped a scaled-down version of its Freeway programmable gateway that is targeted at remote sites needing access to multiprotocol hosts.

The Freeway 1000 connects client workstations on Transmission Control Protocol/Internet Protocol nets to host computers over synchronous wide-area links. The gateway is aimed at the financial services and defense markets as it supports some 50 protocols common to those industries.

Simpact's Freeway 1000 gateway

- Connects remote TCP/IP LANs to host computers that support a variety of industry-specific protocols.
- Sports a 5M byte/sec backplane, 1 Ethernet connection and up to 8 T-1 ports.
- Is programmable, allowing users to customize its function.
- Costs $6,000 and will be available in June.

Freeway 1000 is based on a 5M byte/sec Industry Standard Architecture bus and is powered by a 25-MHz Intel Corp. i486 microprocessor.

The gateway sports a single Ethernet attachment and as many as eight synchronous wide-area ports, each capable of running at up to T-1 speeds. It attaches to front-end processors, terminal controllers and packet switches at host sites via X.25 and bisynchronous links, and performs translation between TCP/IP and the host protocol.

The new gateway augments Simpact's higher end Freeway system that debuted last summer. That system sports a 40M byte/sec VME bus, a single Ethernet and as many as 64 synchronous links, each running at 64K bit/sec. It costs $12,500 (*NW*, July 12, 1993, page 6).

Freeway 1000 houses multiple processors that handle wide-area network protocols, server management and LAN processing. Simpact's new ICP2424 intelligent communications processing board, which is based on a 20-MHz Motorola, Inc. 68340 microprocessor, manages the high-speed links. The Freeway 1000 can support two ICP2424 boards, each of which supports four synchronous ports.

Freeway 1000 is also programmable, meaning users can configure the system to filter out superfluous data and retrieve only the data they need from the remote host.

The Dow Jones Co. is evaluating Freeway 1000 as a vehicle for disseminating market data from its Telerate service to subscribers.

"It's initially attractive because of its price point," said Walter Christensen Jr., vice president of network systems at Dow Jones' Telerate service. "We've got in excess of 70,000 terminals over thousands of offices worldwide. We're looking at it as an intermediary distribution mechanism [between] our host system and the customer site. It will give us one more level of tiering in our net."

Freeway 1000 costs $6,000 and will be available in June.

✆Simpact: (619) 565-1865.

BRIEFS

IBM last week announced it was porting its Simple Network Management Protocol-based **NetView/6000** platform to the Sun Microsystems, Inc. Solaris system.

NetView for Sun Solaris will bring NetView's automatic locating, mapping and monitoring capabilities to Sun-based Transmission Control Protocol/Internet Protocol nets.

Sun is the NetView/6000 platform's second major third-party vendor in a year. Digital Equipment Corp. recently shipped its Polycenter Manager for NetView.

NetView for Sun Solaris is available now for $15,650.

IBM: (919) 543-9627.

BateTech Software, Inc. has rolled out a **help desk** system that uses knowledge-based techniques in network troubleshooting.

The system, called Customer-One, sports a Windows- or Windows NT-based graphical user interface, and combines a Microsoft Corp. SQL Server for Windows NT database with a text search and retrieval engine. It works with Transmission Control Protocol/Internet Protocol, X.25 and Novell, Inc. NetWare networks.

Solutions to support problems are automatically logged in Customer-One's knowledge base for future reference.

Users can also set time-limit parameters that specify when problems should be escalated to a higher level attendant.

Pricing for Customer-One starts at $7,500. It is available now.

BateTech: (303) 763-8333.

TxPort has unveiled a module for its 1051 network access chassis that allows users to manage several T-1 data service unit/channel service units (DSU/CSU) via the **Simple Network Management Protocol** and **Telnet.**

The 8100 Site Controller provides an SNMP agent for DSU/CSUs housed in TxPort's 1051 rack. Through a single Internet Protocol address and an attachment to an Ethernet local-area network, the 8100 allows network managers to monitor multiple DSU/CSUs as if they were a single network access system.

The 8100 is available now for $3,445.

TxPort: (205) 772-3770.

Process Software Corp. last week said it is now providing 24-hour, 7-day-a-week service and support for its **TCPware** software.

TCPware is a Transmission Control Protocol/Internet Protocol stack for Digital Equipment Corp. VAX systems.

It allows users to connect those systems to other computers from multiple vendors that also support TCP/IP.

Process Software's TCPcare Plus provides customers with TCPware maintenance training and support, including software and documentation updates, price protection, discounts on educational services and technical support.

Pricing for TCPcare Plus starts at $3,500. It is available immediately.

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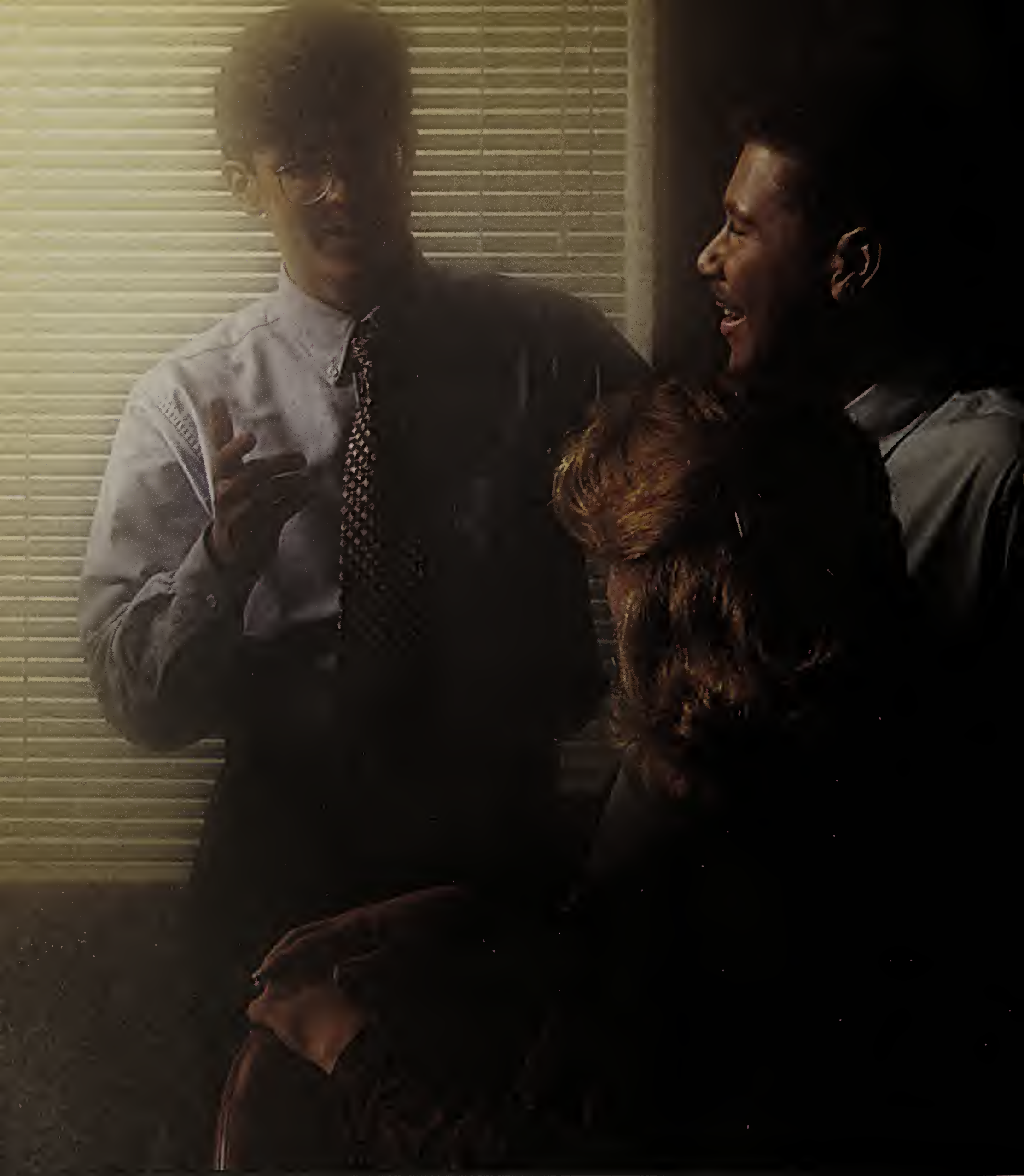

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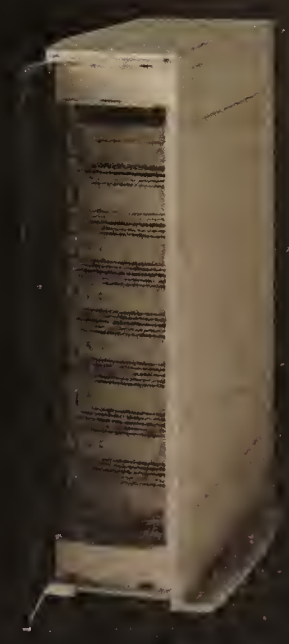

To Work digital™

Users arm for self-defense in wake of computer virus attacks

BY ELLEN MESSMER

Washington, D.C.

With computer viruses doubling in number every year and becoming more stealthy, vendors of antivirus products are turning to a detection method based on artificial intelligence to fight back.

The traditional method of identifying each virus "signature" requires vendors to constantly upgrade their software to catch new viruses. But using a self-learning or heuristic approach, the products can monitor for abnormal virus-like activity in computer memory and files, rather than scan for specific viruses.

Symantec Corp. of Cupertino, Calif., last week updated its Symantec AntiVirus for Macintosh 3.5 product to recognize and protect against the INIT-29B virus, discovered in March. While not intentionally malicious, INIT-29B can cause memory errors, system crashes and other havoc when it infects Macintosh application, data and system files.

With about 500 separate viruses identified "in the wild" — found in computer systems — and more than 3,000 other viruses known to exist worldwide, security experts from the vendor and user communities acknowledge that they face an escalating battle against the virus writers underground.

Frank Tirado, security officer at the Department of Agriculture, said his agency seldom used to see computer viruses. But last month alone, a number of virus outbreaks occurred. These incidents were quickly brought under control since the affected computers were running virus-scanning software.

A security officer for another federal agency said privately that he has a 50-node local-area network with critical data, and just weeks after the agency installed scanning software from Norman Data Defense Systems, Inc. on each personal computer, a virus was flagged.

Top ten computer viruses

Name	Alias
1. Form	No alias
2. Stoned.Standard.B	New Zealand
3. Stoned.Michelangelo	No alias
4. V-Sign	Cansu and Sigalit
5. Kampana.3700:Boot	Anti-tel, Telecom and Telephonica
6. Joshi.A	No alias
7. Stoned.Empire.Monkey	No alias
8. Green_Caterpillar	1575, 1591 and Find
9. Tequila	No alias
10. Jerusalem.1808. Standard	1808, Israel and Friday 13

SOURCE: SYMANTEC CORP., CUPTERTINO, CALIF., AND 20 VIRUS INFORMATION PROFESSIONALS.

"We recommend everyone have antivirus software," Tirado said. "If you miss even one virus, it's like a time bomb waiting to go off." Computer viruses are spread easily by file transfer once a workstation's memory or disk is infected.

Some viruses, such as Michelangelo (see graphic), are written to destroy data. But even the most innocuous viruses present a threat.

Viruses often cause destruction in files and stored data simply because the badly written code wreaks havoc in computers and network operating systems, pointed out Steve White, senior manager at IBM's High Integrity Computing Laboratory.

He noted that the harm done by this month's top virus, the MS-DOS based virus called Form, which infects system boot records, is largely unintentional. But it will cause loss of data on the High-Performance File System on OS/2 hard disks.

Corporations and government agencies are guarding their critical data with software utilities to handle specific viruses, but the newer heuristic detection method relies on AI to nab any virus in the act.

Pioneered by the Dutch firm Electronic Systems and Special Services B.V. (ESaSS) in The Netherlands, heuristic scanning and cleaning does not presuppose any knowledge of the virus.

But when initially installed, ESaSS's ThunderByte software is likely to give the user a high number of false alarms, called false positives in the industry. The security administrator must oversee the initial antivirus scan so the ThunderByte database can record normal activity, lowering the number of false positives.

Howard Thaw, president of TCT International Corp., the Massena, N.Y.-based subsidiary of ESaSS in the U.S., said ThunderByte is now being used by Phillips Electronic N.V., KLM Airlines and The SITA Group.

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☐ 7-12 months ☐ no plans at this time
☐ 13-24 months

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What is your responsibility in the purchase decision process?

☐ determine needs/features
☐ evaluate/recommend suppliers
☐ authorize purchase
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Users detail IBM routing experience

BY MICHAEL COONEY

With the arrow wounds in their backs still visible, pioneering adopters of IBM's Data Link Switching (DLSw) technology are finally reporting some hard-fought success stories.

Developed by IBM, DLSw enables users to send Systems Network Architecture and Network Basic I/O System traffic reliably over Transmission Control Protocol/Internet Protocol backbones.

Since its introduction on IBM's 6611 router in 1992, DLSw has seen little in the way of implementation success stories, and many users still complain about its handling of NETBIOS traffic (*NW*, Feb. 7, page 15). Although DLSw has been accepted by the Internet Engineering Task Force as an informational request for comment (RFC 1434), vendors continue to spar over its implementation.

The latest round of bickering arose as The Tolly Group, an independent testing lab, began benchmarking DLSw performance last week (*NW*, April 4, page 4). The decision to test devices that support RFC 1434 angered some vendors because they say the specification is too limited.

Through all of the smoke, however, some trailblazing implementors have emerged that are capable of pointing out possible DLSw ambushes. For example, the Missouri Highways and Transportation Department in Jefferson City deploys about 30 IBM 6611s all using DLSw. "We were an SNA shop until about two years ago, when we decided to link LANs from around the state using a TCP/IP backbone," said Frank Senter, a network computer specialist with the highway department. "Our primary concern was keeping the SNA traffic flowing smoothly."

But that did not happen at the beginning. "When we first set it up, we were getting killed because our SNA sessions kept dropping," he added.

The problem was a configuration glitch. "When you set up DLSw, every segment has to be unique," Senter explained. "There are so many variables in router configurations, you have to be very logical and configure them in a precise step-by-step procedure."

According to Senter, his DLSw implementation is much more stable now, although NETBIOS throughput is still a concern. "We're looking forward to better overall throughput and improved NETBIOS as the new releases of IBM router software roll out," he said. "Right now, the routers can support only a few NETBIOS sessions at any given time."

Other users are also looking forward to better NETBIOS performance. "Getting the NETBIOS sessions up and keeping them up takes extra work, but we think its pretty stable now," said Brian Spears, manager of information technology at Konica Business Machines USA, Inc. in Windsor, Conn. Konica connects 50 branch offices with IBM 6611s running DLSw.

According to IBM, its latest release of 6611 software, Multiprotocol Network Program Release 2, which became available March 25, should address many user issues. For example, Release 2 promises a 40% increase in the number of NETBIOS transactions DLSw can handle and a 70% improvement in response times between DLSw-connected boxes.

"SNA and NETBIOS can be very timing-sensitive, so if you aren't prepared, you could have problems," Spears said.

CrossComm

Continued from page 14

with one router module and one 16-port MAU module to provide integrated hub capabilities.

The XL10 can also support the DSU/CSU, RMON, compression and SDLC conversion options as needed.

The XL5 comes standard as an Ethernet or token-ring router that supports as many as two WAN connections but can be upgraded with the optional functionality of the XL10, with the exception of the hub capabilities.

The XL2 supports one Ethernet or token-ring interface and one WAN connection, but users can add DSU/CSU, RMON and compression as needed.

"The fact that different models can scale up in terms of functionality is one of the strengths in the CrossComm remote offerings," said John DePietro, senior analyst at International Data Corp. in Framingham, Mass.

"The integrated hub/router with single management is also attractive, especially in one of CrossComm's biggest target markets: the SNA remote site that needs routing and hubbing functions because it is looking to upgrade to a LAN environment," he added.

The low-end XL line is priced from $995 to $5,295, depending on configuration.

✆CrossComm: (800) 388-1200.

Comments?

See "Contacts" box on page 2.

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new networks on the fly. What's more, you can internetwork and manage multiple Ethernet, Token Ring, and FDDI LANs all within the same hub.

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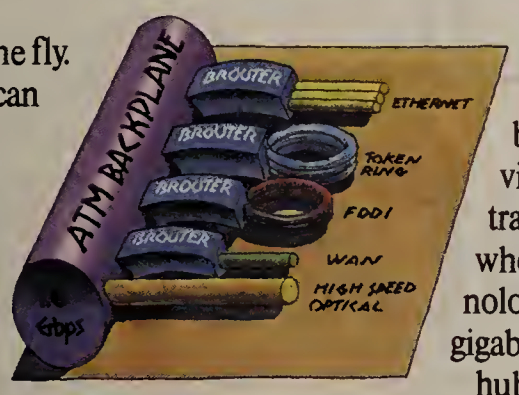

The Enterprise Hub's ATM Backplane architecture allows incremental expansion of your network to utilize over 2 Gbps of bandwidth.

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Segmented hubs have become the network's highway system. So integrating bridges and routers within the hub makes perfect sense. However, that can result in the type of backplane traffic that resembles rush hour in L.A. But the Enterprise Hub's unique internetworking architecture provides an express lane to speed traffic through. And it saves you money, too.

And when it comes to ATM, your hub is ready when you are. Its ATM Backplane offers 1.6 Gbps of throughput. Because the ATM Backplane is cell-based, it supports high-speed switching for today's LAN traffic as well as future networks that combine voice, video and data traffic. And when technologies like gigabit hub-to-hub links and ATM interfaces are ready, your hub's ready for them.

MORE INTELLIGENT MANAGEMENT.

There's nothing too smart about expanding your network to the point where it grows beyond your control. Here again, the Enterprise Hub is the intelligent choice.

Dedicated SNMP processors reside on every module in the hub. So you always have easy access to the information you need. And every time you add a module, you also add network management processing power.

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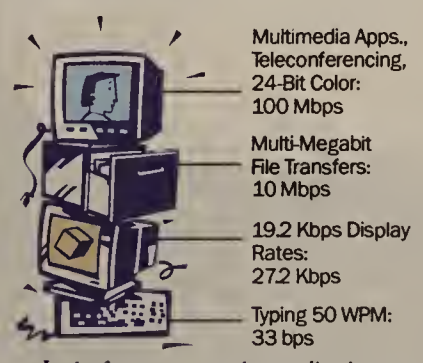
THE BIG PICTURE.

Even if you're focused on your company's current needs, experience has taught you enterprise networking needs are unpredictable. So the hardware investments you make today should pay dividends for many years.

It's time to think big. Look at the Enterprise Hub's 2 Gbps bandwidth versus your typical hub's



In the future, as complex applications demand greater bandwidth, the Enterprise Hub gives network managers the flexible architecture they need to make migration simple.

10 or 20 Mbps. You'll find a huge difference in terms of performance. But in terms of price, you'll find it competitive with today's intelligent hubs.

So if you're expecting big things from your network, look into an Enterprise Hub. Call **1-800-395-5267** for more information about the Enterprise Hub and Hughes LAN Systems' big picture networking solutions.

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Users, analysts positive on Novell's CEO choice

BY *NETWORK WORLD* STAFF

Provo, Utah

The wait is over. After a four-month search for an industry insider to fill Ray Noorda's shoes, Novell, Inc. last week announced the appointment of Hewlett-Packard Co.'s Robert Frankenberg as its next president and chief executive officer.

User and analyst reaction to Novell going outside its own ranks for a new leader was mixed but generally positive.

"Historically, there has always a been a problem with an outsider picking up the reins, and in Novell's case, the reins aren't draped over the foot plate, they're dragging in the dirt," according to Tom Nolle, president of CIMI Corp., a consultancy based in Voorhees, N.J.

"I really thought they would pick somebody from the inside for the job," said Don Anthony, local-area network administrator at Children's Hospital in Pittsburgh.

Novell's business strategy has been sound to date, "and you'd think they would want someone who already knows the ropes to keep them going," he added.

Jack Karp, president of Affinity Research Corp., a consultancy in Greenwich, Conn., said Novell made the right choice by going for an outsider.

"[Novell] needed to have someone who could take the company from $1 billion to $10 billion, and the company also needed someone that had some large account experience," he said.

Greg Scott, computing services manager for the College of Business at Oregon State University in Corvallis, was not surprised that Novell tapped the HP management team, but he expected the choice to be Richard Hackborn, who has successfully managed HP's printing division.

When contacted by *Network World*, however, Hackborn denied that he had ever been considered for the top slot at Novell.

According to Scott, Frankenberg is a good alternative.

"He has been successful in keeping his divisions healthy, which is a significant thing," Scott said. "Five or six years ago, HP was on the edge of becoming another DEC."

BEEN IN TRAINING

Frankenberg, 46, comes to Novell after spending more than 20 years moving up through HP's ranks. Most recently, he was vice president and general manager of HP's Personal Information Products group.

"In some ways, I feel like I've been training for this opportunity for 25 years," Frankenberg said.

Frankenberg will be in charge of day-to-day operations at Novell, while Noorda will remain the company's chairman indefinitely.

According to Novell's new president, the biggest challenge ahead for him is to make Novell the leading provider of networked applications. Novell's pending acquisitions of WordPerfect Corp. and the Quattro Pro spreadsheet line from Borland International, Inc. will be the base of the company's entrance into that market, he said.

"I definitely think [the networked applications business is] the way to go, and those two acquisitions were pivotal in my decision to take the job," Frankenberg explained.

See **Novell**, *page 22*

Robert Frankenberg
President, CEO
Novell

Born: May 10, 1947

Hometown: Chippewa Falls, Wis.

Education: B.A. degree in computer engineering from San Jose State University

First job: Manufacturing technician in HP's Data Division in Cupertino, Calif., from 1969 to 1971

Last job: Vice president and general manager of HP's personal information products group in Santa Clara, Calif., from 1990 to 1994

BRIEFS

Unhappy with the way LANQuest Labs, an independent test center in San Jose, Calif., has been running compatibility tests of its Multiprotocol Router (MPR), **Novell, Inc.** last week announced The Tolly Group would assume responsibility for those benchmarks. Under terms of the contract, The Tolly Group, formerly InterLAB, will be the exclusive **performance testing** lab for validating how third-party token-ring, Ethernet and Fiber Distributed Data Interface adapter cards work with the software-based MPR.

Proxim, Inc. has announced it has begun volume shipments of RangeLAN2/ISA, a 2.4-GHz **wireless local network** adapter card that supports data rates of up to 1.6M bit/sec. The adapter card uses spread-spectrum technology and employs high-speed frequency hopping technology recently approved by the IEEE 802.11 committee as part of its proposed draft standard. The card is designed for the expansion slot of PC/AT and PC/XT desktop computers and network servers.

RangeLAN2/ISA adapters cost $595 each.

Proxim: (415) 960-1630.

Standard Microsystems Corp. (SMC) and **CONNECTronix** have announced a strategic partnership that will allow CONNECTronix to offer its WinTronix/400 Advanced Program-to-Program Communications software with SMC's token-ring network adapters. Together, SMC TokenCard adapters and WinTronix/400 provide a turnkey **token-ring-to-Application System/400** connectivity package.

Bundled, WinTronix/400 Software and TokenCard Elite or TokenCard Elite/A are available from CONNECTronix for $499.

CONNECTronix: (800) 658-5200.

Trellis grows and upgrades VINES mgmt. product suite

BY CHRISTINE BURNS

Atlanta

Trellis this week will announce several administrative tools that ease desktop management, enable software monitoring and centralize fax services throughout VINES 5.X networks.

The offerings, all of which are tightly integrated with Banyan Systems, Inc. 's StreetTalk III global directory service, give network administrators centralized control of distributed desktop systems throughout a Banyan network. The products will debut at the Association of Banyan Users International conference here.

"The underlying theme for all of these products is to reduce the number of trips the administrator has to make to each VINES desktop," said Chip deVillafranca, marketing manager of Trellis.

Trellis is a Southborough, Mass., systems integrator and a member of The Asset Group, a national consortium of systems integrators in Princeton, N.J.

Development of the first product, Net Tools Desktop Manager 5.0, was a collaborative effort between Trellis and Automated Design Systems, Inc. (ADS), a builder of Windows network utilities here. The desktop management utilities in Net Tools Desktop Manager 5.0

See **Trellis**, *page 22*

Climbing up Trellis

Upgraded VINES management tools from Trellis

Product	Price	Availability
Redirector 2.1	$1,695	Now
TrellisFAX 2.0 for DOS*	$1,695	Later this month
Application Meter 3.0	$995	June
Net Tools Desktop Manager 5.0	$149 for administrator tools, plus $49 per user	August

*The Windows add-on to TrellisFAX 2.0 will ship this summer for $40 per user.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: TRELLIS, SOUTHBOROUGH, MASS.

LOW-END HUBS

NetWorth rolls out new stackable hub line

BY SKIP MACASKILL

Irving, Texas

NetWorth, Inc. last week introduced a new line of Ethernet stackable hubs designed to give users more flexibility in creating workgroups by allowing them to logically group disparate hubs so they appear to be in the same stack.

The new Series 2000 Snappable Hub family is based on the company's Extended Repeater Architecture (ERA), which allows as many as 10 Snappable hubs in different rooms and floors of a building to be managed as a single, logical repeater.

While most stackable hubs are linked via a 6-inch backplane ribbon cable — meaning the hubs must be piled on top of each other — NetWorth uses standard twisted-pair wiring and a special expansion port to enable users to place hubs as far as 150 feet apart in a single repeater hop. At the cost of incurring a second repeater hop, that distance can be extended up to 250 feet.

NetWorth is able to do this because the expansion port utilizes all four pairs of wire in a standard copper cable. Two of the pairs are used for Ethernet data transmission, while the others are used for management and serial communications.

In contrast, Hewlett-Packard Co.'s new AdvanceStack hubs need to be linked with a thinnet cable for data traffic and an unshielded twisted-pair wire for management traffic.

DISTRIBUTED MGMT.

Each Snappable hub supports 16 ports of 10Base-T Ethernet and comes equipped with a Simple Network Management Protocol agent that compiles traffic statistics and management data for the hub. That information is cached and forwarded to the top hub in the stack, which acts as an intermediary between the stack and the centralized management console. If the SNMP agent in one hub fails, the agent in an attached hub can assume the management duties of the failed agent, allowing net management to continue uninterrupted.

The Snappables also support an optional backbone connection via a 17th port that can be configured as an attachment unit interface, BNC or 10Base-FL connection.

See **NetWorth**, *page 23*

Novell

Continued from page 21

Critics said Novell may be spreading itself too thin with these and other recent acquisitions, however.

Other challenges ahead for Novell, according to Frankenberg, involve the company's existing products.

"We've got to bear down and deliver on our promise of UnixWare 2.1 and NetWare 4.X as an enterprise platform," he said.

The new president outlined his strategy for building a better network operating system, which will start with plans to accelerate the acceptance of NetWare 4.X.

"The key to moving along that evolutionary path is getting the right NetWare Loadable Modules in place so that we show the world that we can make networked applications happen," Frankenberg said.

The enterprise capabilities of the NetWare 4.X line also have to be improved on, he said. Specifically, Frankenberg said future versions of NetWare will have to include more management utilities for the enterprise directory service.

"The last thing needed to increase NetWare 4.X sales is time," he said. "You just can't expect a migration of this magnitude to happen over night."

HIGH GRADES

Frankenberg has received high grades from several industry analysts for bringing HP's Personal Information Products group success in a market where competition is commonplace.

"He is largely credited with the turnaround of the PC group at HP, taking HP from a nowhere player in the early 1990s to a huge up-and-comer in 1993," said Susan Frankle, manager of server research at International Data Corp. in Framingham, Mass.

One of the downsides to Frankenberg's extensive experience is that it lies solely on the hardware side of the industry, according to Frankle.

"He has done a turnaround in terms of HP's PC business, but whether he can leverage that into success in the software side of the industry is the question," she added.

Comments?

See "Contacts" box on page 2.

Trellis

Continued from page 21

were provided by ADS, and Trellis provided the VINES integration.

"One thing that the built-in management service in VINES lacks is control down to the workstation level," said Stan Schatt, service director for local net research at Computer Intelligence InfoCorp, Inc., based in La Jolla, Calif. Having desktop control can make a network administrator's life much easier, he said.

Net Tools Desktop Manager 5.0 comprises three modules. The Applications Manager component helps administrators configure desktop machines by using StreetTalk to define user rights and privileges. It ensures that each Windows desktop displays only the applications and menu commands needed.

The second component, the Desktop Control Language module, provides a scripting facility for software distribution. This utility lets administrators update Windows initialization files and other software files from a single DOS or Windows console.

SECURITY CLOAK

Secure Station, the third component, is a network-aware screen saver that provides added security by hiding sensitive screen information when a user leaves a workstation unattended. Authorized users can resume activity via their StreetTalk passwords.

A second new offering from Trellis is Version 3.0 of its Application Meter, which gives administrators control over limited license applications. Application Meter has been upgraded to include new graphing and reporting features, such as current user counts and total usage counts for given periods of time. It also includes a new feature that blocks a user from backing out of Windows into DOS to try to use applications they have not been given permission to access.

Trellis also will unveil TrellisFax 2.0, a server-based service for VINES 5.0 and 5.5 environments. Inbound faxes are delivered to an attendant via electronic mail to be viewed and forwarded. Outbound faxes are created via E-mail and routed directly to the fax server.

This new version includes support for single-line and multiline fax configurations and supports DOS and Windows clients.

Don Sawyer, computer systems analyst with the U.S. Department of Indian Health Services in Billings, Mont., said he bought TrellisFax to save money by decreasing overhead and to ensure the confidentiality of faxed documents.

"Having the records go right to the person's PC is much more secure than having it sit on a fax machine where everybody can read it," Sawyer said.

✆Trellis: (508) 485-7200.

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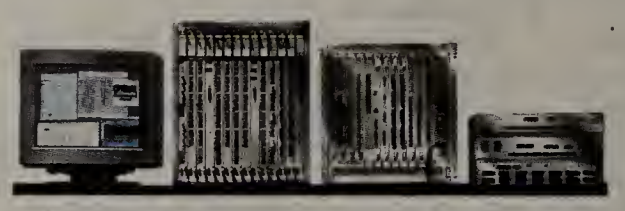

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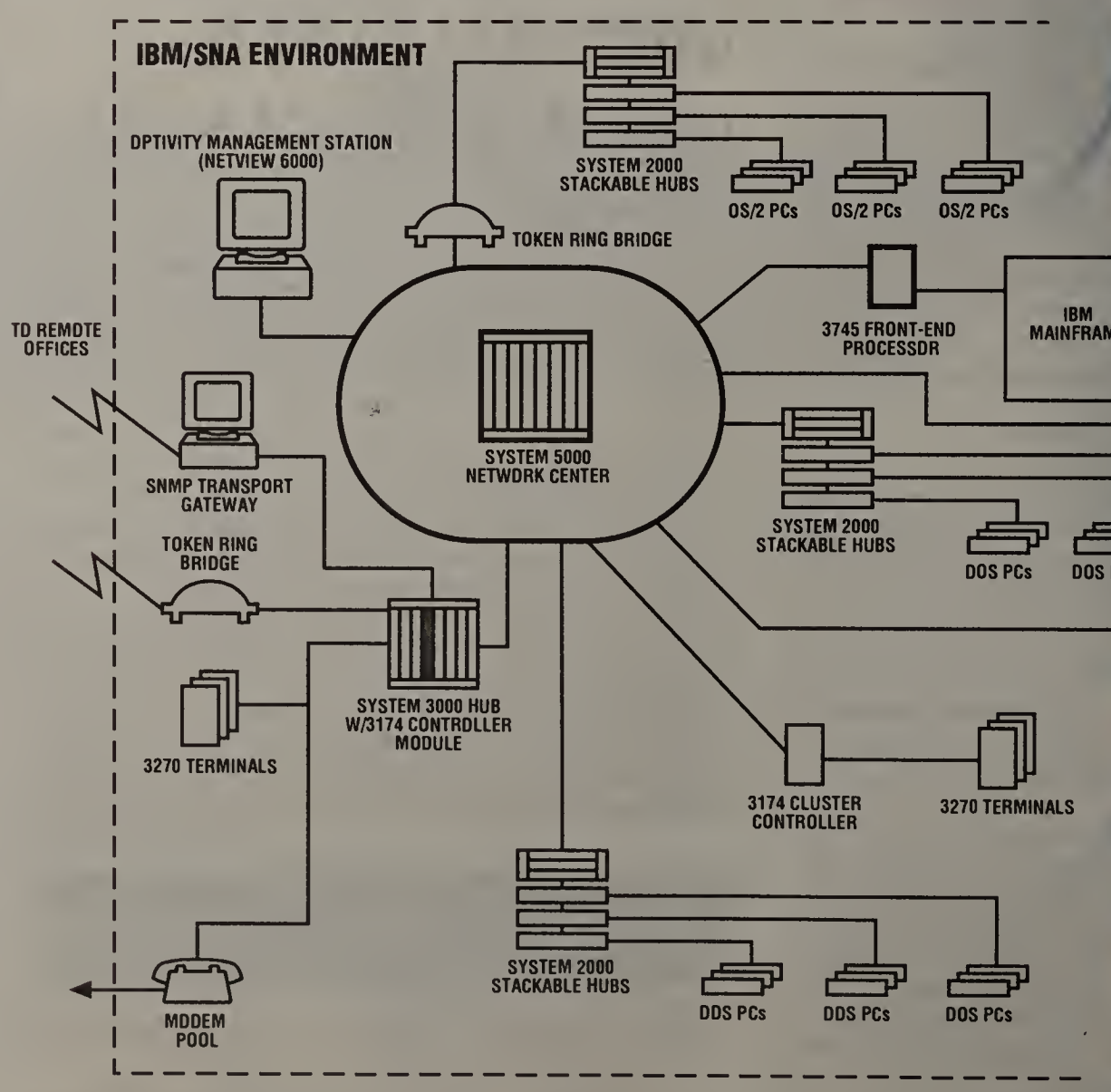

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Kalpana introduces new workgroup Ethernet switch

The 2015 is half the cost of firm's existing 1500 switch.

BY SKIP MACASKILL

Sunnyvale, Calif.

Kalpana, Inc. last week introduced its first fixed-port Ethernet switch, a system designed to increase the throughput of departmental and workgroup 10Base-T nets at half the cost of Kalpana's existing EtherSwitch EPS-1500.

The new EtherSwitch EPS-2015 RS, which supports 15 ports of dedicated 10M bit/sec connectivity to the desktop, builds on the base functionality offered in the Model 1500 by adding virtual networking capabilities, address filtering, and support for the Spanning Tree Protocol (STP) and Kalpana's full-duplex EtherChannel technology.

The 1500 is a modular Ethernet switch that supports between eight and 15 dedicated Ethernet ports.

According to John Kretz, director of technical services at the American Graduate School of International Management in Glendale, Ariz., and a 2015 beta user, the product has proven effective. "For twisted-pair workgroups composed of bandwidth-hungry users and a file server, the 2015 is ideal, especially if you take advantage of the full-duplex Ethernet capabilities," he said. "It may cost more than a 12-port workgroup hub, but for the performance you gain, it's easy to justify."

When comparing the performance gain of a full-duplex connection to the server with a standard 10M bit/sec link, Kretz said he has seen "gains of 30% to 50%, depending on the application we're running."

As Kretz pointed out, users can configure one of the ports on the 2015 as a full-duplex connection, allowing the switch to connect to a server on a single unshielded twisted-pair wire segment that supports two collision-free 10M bit/sec paths.

"Users are under the misconception they have to put their servers on a 100M bit/sec ring to handle the server bottleneck in their Ethernet nets," said Larry Blair, Kalpana's vice president of marketing.

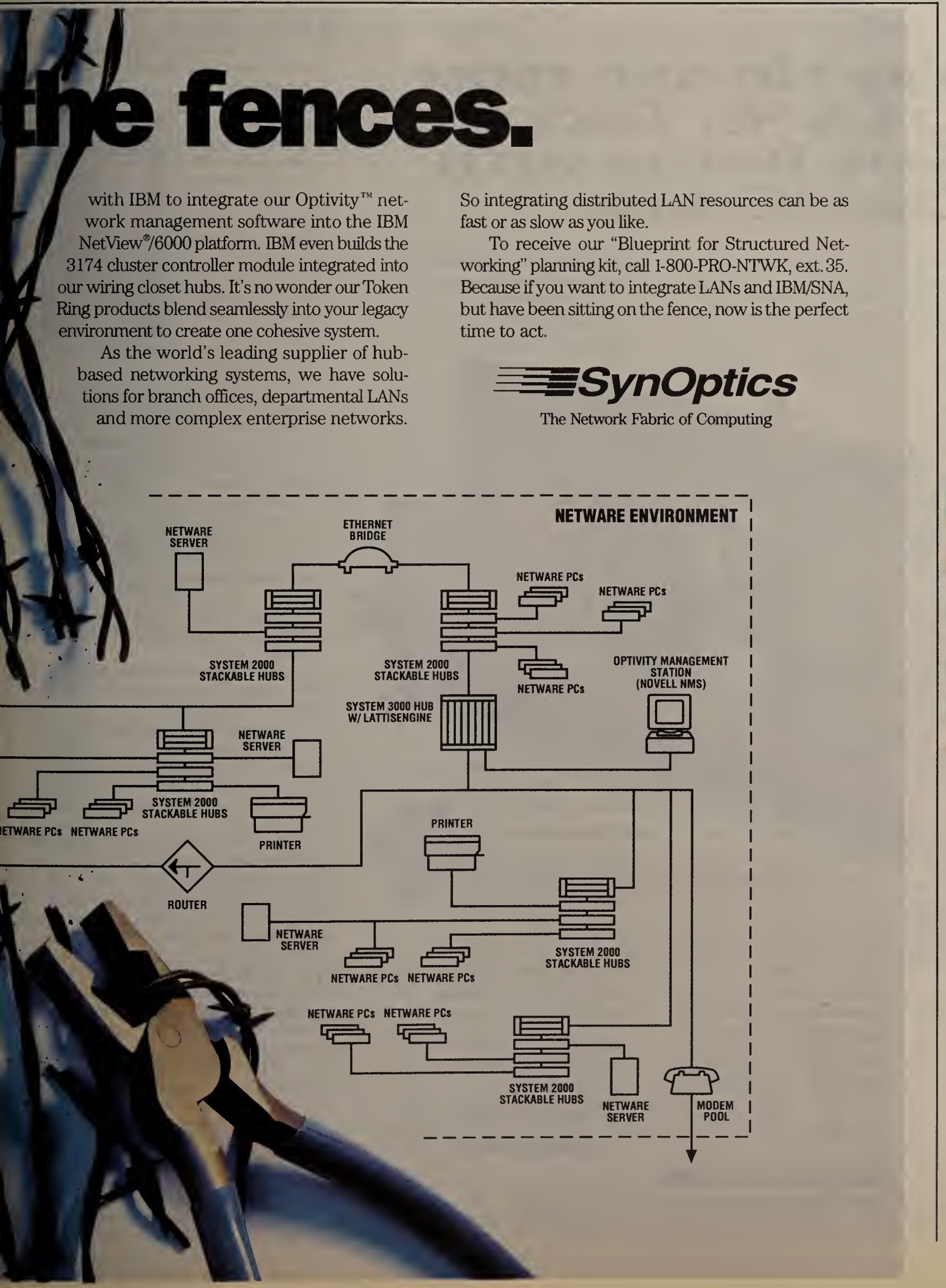
OTHER NEW FEATURES

Here's a summary of other 2015 features.

- The new address filtering capability allows net managers to restrict specific nodes on the network from communicating with other nodes on a port-by-port basis.
- With the virtual networking functionality, each 2015 can be divided into seven separate domains, and net managers can assign any port to any one of the domains. For security purposes, ports in one domain cannot communicate with ports in another domain.
- Support for STP provides path redundancy in a bridged or switched network; and when multiple paths exist, the protocol allows only the most efficient path to be selected.

The 2015, which is available now, ranges in price from $7,500 to $8,500.

✆Kalpana: (408) 749-1600.



It's a snap

Pricing and availability of NetWorth's Snappable line

Product	Pricing	Availability
16-port Snappable Hub	$1,295	Now
Hub with NIC bundle	$1,750	April 15
Hub with HubView bundle	$1,790	April 15
48-port hub bundle	$3,735	April 15
AUI connector	$250	Now
BNC connector	$275	Now
10Base-FL connector	$325	Now

GRAPHIC BY SUSAN J. CHAMPENY

NetWorth

Continued from page 21

NetWorth already offers the 3000 series of stackable hubs for departmental workgroups, but according to Brendon Mills, product-line manager at NetWorth, there are differences between the lines.

"The 3000 is a more sophisticated product that supports higher densities and allows users to segment the hub into three separate LANs so power users and workgroups can be better handled,' he said. "The 2000 is designed to be an easy-to-use option for environments where net connectivity and net management have to be packaged in a cost-effective manner."

In future 2000 releases, eight-port versions, 100M bit/sec Ethernet models and bridge/router capabilities will be supported.

NetWorth offers 2000 hubs packaged with five 16-bit network interface cards or NetWorth's HubView net management application (see graphic).

✆NetWorth: (214) 929-1700.

NET RESULTS

by Mark Gibbs

A heretic cuts loose: E-mail 'ROOLZ,' he says

Well, I've been a good boy for long enough. I've been on the road talking about LANs, the Internet and networking for a few weeks now.

I've talked to scores of LAN administrators who have problems and horror stories about every aspect of network operations you can imagine.

I must mention that they have many success stories, as well, and even though those are impressive, they are far less interesting than the horror stories.

In short, I feel a need to cut loose. Rather than grabbing a can of spray paint and tagging a street sign — perhaps with "LANZ ROOL" — I shall unleash my suppressed and rebellious spirit and ... become a heretic.

"Heretical how?" I hear you say. Get ready folks; you don't always need a LAN!

There, I said it.

"What the hell is he talking about?" I now hear you asking. "Too many seminars have atrophied his brain."

WILD ABANDON

But no. The truth is that we have been slapping in LANs with the wild abandon of a medieval alchemist slapping leeches on his patients regardless of their ills.

The fact is that E-mail can in many circumstances provide just as effective a service for many users as a direct LAN connection.

Think about it, what do most people do on a LAN? They get E-mail. Sure they might load programs from a central file server or even access files on the same system. But the reality is that many users don't actually need to use a file server interactively.

Give them enough disk space on their PC, and their need for a file server is minimal if not nonexistent.

Many users really hardly have an impact on the network at all. To have them directly connected often creates more overhead than the work they do.

For many organizations, laying cable and installing LAN servers is too much of a pain to be addressed now. Yet their need for connectivity is so profound that the lack of communications in their company comes up time and time again when company officials talk about their business.

"Ah!" I hear you say. "What about printing and file retrieval?"

"Ha!" I reply. "That's no problem at all."

If you want to print, there are products that will take a file from E-mail and dump it into a printer queue. There are also products that will act as file archives that are accessed through E-mail.

So what would it take to equip a group of workers with the nuts and bolts to network via E-mail?

Well, to start with, a decent E-mail system that supports remote access to a post office and can do so in the background.

Currently, all of the leading E-mail systems can support such functions under Windows more or less transparently to the end user. All you need to do is arrange for the client system to dial a mail server, say, every half hour to pick up mail.

Now, I'm not suggesting that we don't need LANs. What I am suggesting is that perhaps we are overlooking connectivity solutions based on E-mail that will get our organizations connected a lot more quickly when compared with trying to build full networks from the start.

So when you put off getting the users connected because of lack of time to get a "proper" network installed, you have a wonderful chance to become a heretic and use E-mail instead.

You'll probably still have to put in a LAN eventually, but your organization may just work more effectively in the interim.

Well, it's back on the road for me. I hear they burn heretics in effigy. I'm glad that's one town I'm not going to on this tour.

Gibbs is a consultant and writer based in Ventura, Calif. He can be reached at (805) 647-2307 or on the Internet at mgibbs@rain.org.

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FAST-PACKET NETS

BellSouth will join providers of low-speed SMDS

BY BILL BURCH

Washington, D.C.

For users attracted to the dial-up connectivity of SMDS but not to the cost of a T-1 access link, several carriers are offering 56K/64K bit/sec SMDS connections.

In June, BellSouth Corp. will launch low-speed Switched Multimegabit Data Service in the first of 25 cities scheduled for deployment. The carrier will provide the service at both 56K/64K and 1.544M bit/sec to customers in metropolitan areas.

The regional Bell holding company joins the likes of Ameritech and MCI Communications Corp. with its offerings.

Such services should save users money in two ways, according to Ken Hawkins, BellSouth's product manager for broadband data services. "Your get-started equipment cost is lower, and your access speed is lower," which translates into lower access fees.

SMDS does 56K limbo

Advantages of the Digital Exchange Interface for SMDS:

- **More affordable access links.**
- **SMDS interface gear costs less than $1,000.**
- **Direct attachment of workstations to DSU/CSU, eliminating the need for a router.**

BellSouth has not worked out pricing details, but Hawkins promises the service will be priced competitively. On the customer premises equipment side, low-speed SMDS should cut costs substantially.

This is because with traditional SMDS, customer premises equipment breaks up data traffic into small cells for transport into a carrier's net. However, BellSouth's low-speed SMDS relies on a Data Exchange Interface (DXI) format that encapsulates data into longer frames. This scheme translates into fewer packets, reducing the volume of per-packet headers.

That change not only makes SMDS more efficient at low speeds, but also allows for a less expensive customer premises equipment upgrade. While full-speed SMDS requires an investment of $3,000 to $4,000 in an SMDS-capable data service unit/channel service unit (DSU/CSU), DXI service can get by with a software upgrade that will soon be available for under $1,000, according to Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

"If you could retro a frame relay interface onto a device, you could retro a DXI interface onto the same device with no significant difference in complexity," he said.

Nick Di Iorio, vice president of corporate telecommunications at Young & Rubicam, Inc., a global ad agency based in New York, said the customer premises equipment costs for low-speed SMDS are in line with the $1,000-per-terminal cost he's currently paying for DSU/CSUs for his frame relay net.

See **BellSouth**, *page 32*

Telecom bills may wreak havoc

Fed mandate for local competition raises state quality control issues.

BY ELLEN MESSMER

Washington, D.C.

Eager to see local services expanded through competition, Congress is telling the states they have to let every newcomer into the local exchange business, a tack that raises network quality control and other questions.

Telecommunications bills touted as information superhighway legislation in Congress would preempt state authority to decide entry conditions for local service providers, conditions for universal service and rates, and interconnection guidelines.

State regulators are worried that the bills go too far, undercutting state power over pricing and network reliability.

If the legislation passes, state regulators will be forced on a long march into the uncharted terrain of open-ended competition, with the Federal Communications Commission calling the shots (see story, this page).

"We don't see a clear vision of goals and measurements," said Jerry Johnson, policy analyst for the state of Texas.

Two bills unabashedly undercut the states' traditional telecommunications rights (see graphic).

One is the National Communications Competition and Information Infrastructure Act of 1993, introduced by Rep. Edward Markey (D-Mass.) in the House; the other is the The Antitrust Reform and Communications Act of 1994, introduced by Sen. Ernest Hollings (D-S.C.).

MARKEY'S PROPOSAL

The Markey bill requires the FCC and the states to review local tariffs across 50 states within 18 months of being filed to determine if they are cost-based.

The FCC would decide whether to approve or modify them, as well as where competition can be introduced.

Few state regulators oppose the Markey bill's provision to lift

See **Mandate**, *page 28*

Common Carrier Bureau could face unwieldy regulatory load.

BY BILL BURCH

Washington, D.C.

The various telecommunications bills now making their way through Congress could put a heavy burden on the FCC's Common Carrier Bureau and jeopardize industry safeguards.

The bureau, the Federal Communications Commission's telecommunications industry watchdog, would have to enforce provisions of telecommunications bills proposed by Congressmen John Dingell (D-Mich.), Ernest Hollings (D-S.C.) and Edward Markey (D-Mass.) should they become law. Between them, these bills attempt to open up the nation's voice networks and make numerous other reforms.

Probably the bills' most controversial proposal would be to allow the regional Bell holding companies into the long-distance market. If this happens, it will be up to the Common Carrier Bureau and its acting head, Richard Metzger, to ensure that the RBHCs' long-distance operations play fair.

BURDEN OF PROOF

But to even earn entry into the long-distance business, the RBHCs would first have to show that they face substantial local competition and that they have opened up access to their networks for other carriers. The burden of showing compliance with these requirements is on the RBHCs, and Metzger said he is confident that the FCC and other regulators can uphold the bills' goals concerning conditions for market entry.

The challenge for the bureau may be in regulating the RBHCs' new operations. The RBHCs' long-distance divisions should pay market rates for local access, but the carriers may be tempted to cut corners as they have at other times in favoring their unregulated subsidiaries.

The answer will be strong enforcement of transaction rules and local access tariffs, Metzger said. Also, with much of the industry now under price

See **Bureau**, *page 28*

How federal legislation would affect the states

National Communications Competition and Information Infrastructure Act of 1993 (H.R. 3636)

Preempts state laws prohibiting local exchange competition; creates rules for equal access and interconnection; requires Federal-State Joint Board to recommend new universal service.

The Antitrust Reform and Communications Act of 1994 (H.R. 3626)

Allows RBHCs to offer interexchange services within their own territories if approved by the FCC and the Justice Department; state authorities must approve RBHCs' move into intrastrate long-distance market.

Communications Act of 1994 (S. 1822)

Preempts state or local power to prohibit any entity from providing intrastate or interstate telecommunications services; FCC may take any action to ensure that state regulatory authorities force carriers to provide consumers with bandwidth suitable for multimedia services at reasonable rates.

Clinton administration's proposed Title VII legislation

Provides regulatory flexibility to common carriers and cable network operators that provide at least 20% of their subscribers with broadband services.

BRIEFS

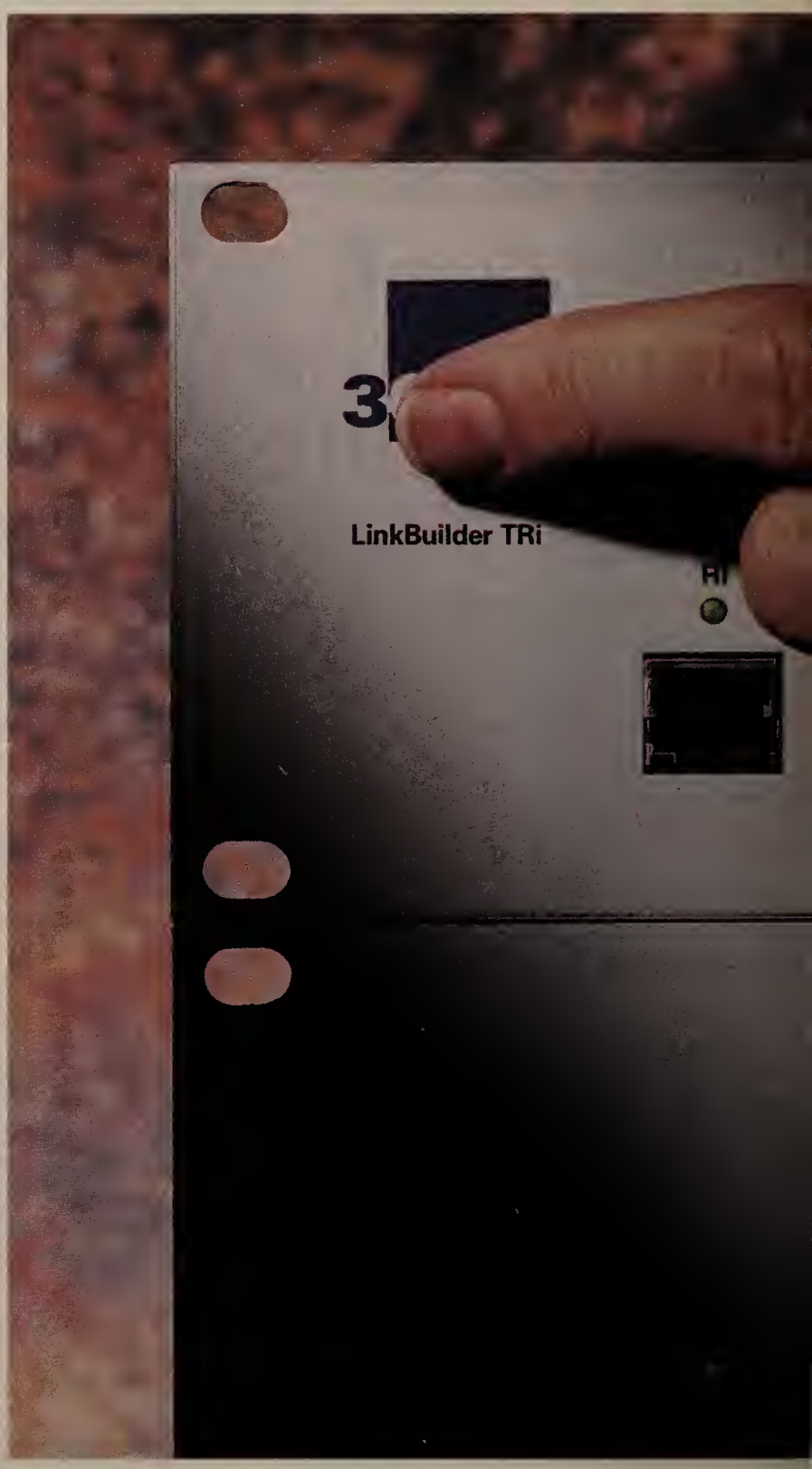
The U.S. Congress' research arm, the **Office of Technology Assessment (OTA)**, received budget approval last week for a year-long study into how **wireless technologies** might fit into the **National Information Infrastructure (NII)**, said Todd La Porte, an OTA analyst. The study was proposed by George Brown, chairman of the House Science, Space and Technology Committee, and cosigned by Rep. Rick Boucher (D-Va.), who perceived that wireless has been essentially left out of NII discussions. La Porte said the study will emphasize standards interoperability issues and the social implications of wirelessly enabling millions of people.

WilTel Communications Systems, Inc. said last week it has completed the acquisition of **BellSouth Communication Systems, Inc.'s** customer premises equipment sales and service operations outside BCS' nine-state local service region. The acquisition increased WilTel's nationwide employee base by more than 40%, WilTel said, to about 2,500 employees.

Tellabs Operations, Inc. based in Lisle, Ill., will add **Asynchronous Transfer Mode (ATM)** feeder switches to the products it offers carriers under an agreement with ATM switch maker **LightStream Corp.** in Billerica, Mass. LightStream has also started selling its ATM switch to cable companies (*NW*, March 28, page 2).

Network Equipment Technologies, Inc. (NET) in Redwood City, Calif., will provide its time-division muxes to **Sprint International's** global backbone net under a contract valued at more than $1 million. This will help Sprint International provide X.25 and frame relay services in non-U.S. markets.

Sprint Corp. will provide NBC's full-time cable talkfest, *America's Talking*, with 800 and 900 numbers, polling capabilities and other telemedia services under an agreement valued at more than $1 million. The new cable net will debut July 4.



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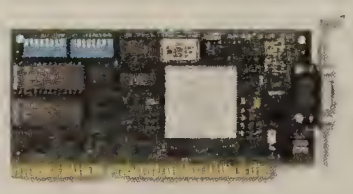

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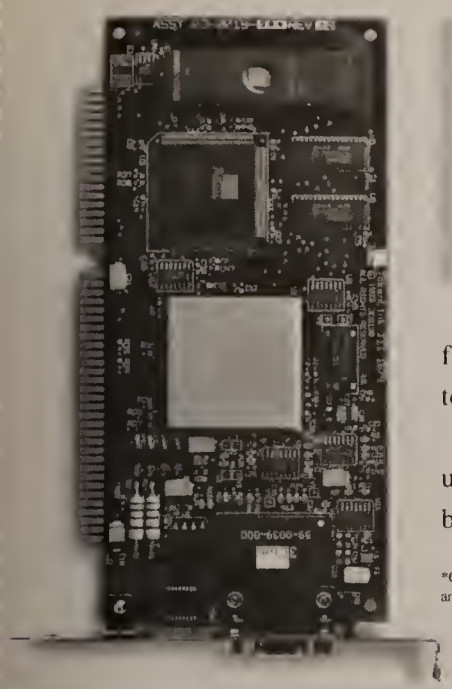

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NYNEX, PacBell next to broaden ISDN

BY DAVID ROHDE

Washington, D.C.

Two more regional Bell holding companies are slated to join the movement to provide Integrated Services Digital Network capabilities to customers whose nearest central office switch is not ISDN-capable.

Officials from NYNEX Corp. and Pacific Bell said they are planning to match recent announcements by Bell Atlantic Corp. and BellSouth Telecommunications, Inc. to provide extended ISDN service.

ISDN...almost anywhere?

Plans to provide ISDN capability even where the nearest central office switch is not ISDN-capable are leading to rapid increases in service coverage:

Percent of ISDN-capable access lines		
Company	End of 1993	End of 1994
Ameritech	70	80
Bell Atlantic	58	100
BellSouth	46	72
NYNEX	31	55
Pacific Bell	60	99
Southwestern Bell	54	60
US West	42	57

SOURCES: BELL ATLANTIC, BELLCORE, BELLSOUTH AND PACIFIC BELL
GRAPHIC BY SUSAN J. CHAMPENY

The move would benefit users who have been holding off on committing to ISDN until they know the service is available wherever they have a presence.

"McDonald's [Corp.] told me a year ago, 'When you give us the capability, we will [install ISDN lines] in California,' " said Kathie Blankenship, director of switched digital services for Pacific Bell in San Ramon, Calif.

Using a variety of foreign exchange techniques, Pacific Bell will gradually move from 60% to 99% ISDN availability among its customers, Blankenship said. A spokesman said NYNEX plans to do likewise, although the details have yet to be worked out.

Additional investment is required by telephone companies to provide extended ISDN service, Blankenship said.

The telephone companies are using digital repeaters, special line cards and remote-to-host connections within their networks to get ISDN capabilities to more customers, she said.

In some cases, they are backhauling T-1 lines from foreign switches to the customer premises.

As far as the other RBHCs are concerned, Ameritech said ISDN extension is nothing new for them.

"That's really a pattern of what Ameritech pioneered several years ago," said a spokeswoman for Ameritech Advanced Data Services. "It's something that we've been doing all along."

BellSouth is completing its ISDN rollouts not by making every central office switch ISDN-capable, but by routing the capability where necessary from other switches within the same exchange area.

But while BellSouth said customers would not have to pay extra to receive ISDN service from a different switch, Bell Atlantic said there would be an extra charge for customers with locations more than three miles from ISDN switching offices.

These kinds of charges may crop up in other territories, as well.

Users in a recent survey by CIMI Corp. in Voorhees, N.J., found that usage charges on ISDN lines average 8% more than regular phone calls, said CIMI President Tom Nolle.

US West on trail of toll fraud

US West's Customized Fraud Management Service picks up the scent of abnormal calling activity by:

- **Tracking call attempts over a set period of time.**
- **Monitoring activity by phone number called or by source phone number.**
- **Analyzing traffic patterns.**

US West begins fraud tracking trial next month

BY BILL BURCH

Englewood, Colo.

In a move to fight toll fraud, US West, Inc. next month will launch a one-year trial of a call monitoring system that keeps track of attempts to place operator-assisted and calling card calls.

The service is meant to help long-distance carriers and other third-party providers detect fraud, and it should cut users' chances of becoming fraud victims.

When it's launched, US West's Customized Fraud Management Service will support two kinds of monitoring. Velocity checking will track the number of call attempts over a period of time, while screening will monitor calls to particular phone numbers. US West will analyze both categories of statistics in regular reports to customers.

Rather than monitoring actual calls, the system will track queries to US West's database, which contains information such as whether a customer allows third-party billing to their line.

When someone attempts to place a long-distance call, interexchange carriers check for billing approval with the database, much in the way a merchant verifies a credit card.

For verifying billing, US West will ask one-half cent per call. For calls made on a US West calling card, the company plans to offer long-distance carriers a money-back guarantee on the call for three-fourths of a cent per call.

The idea of charging long-distance carriers to verify billing, then adding a premium on users' bills for fraud insurance does not sit well with some.

"They're charging one fee for the service, but they're saying, 'If you want a guarantee, we'll charge more,' " said John Haugh, editor of "Telecom & Network Security Review" in Portland, Ore. "[That's] a little like buying a round trip ticket to [Los Angeles] from New York, and you pay one price if you want a safe flight and another if you want to run the risk of being in an accident."

Long-distance carriers have long had sophisticated call monitoring operations and have been impatient with local carriers' fraud control, Haugh said. "They're paying huge fees [for database queries], . . . and they're not getting any guarantee that the end result is something they can count on," he said.

Even though billing issues must still be worked out, the US West service should increase carriers' sophistication in fighting fraud. On their own, long-distance carriers can only monitor the traffic on their own networks.

With the US West service, carriers will get the larger perspective of queries from all carriers to a particular calling card or phone number. With the extra knowledge the new service provides, carriers can choose not to bill consumers for calls they believe are fraudulent, said Jim Maher, a manager with US West's carrier marketing group.

Mandate

Continued from page 25

the cable TV-telephone company cross-ownership restrictions, which would allow telephone and cable companies to provide both types of service in the local markets they serve.

But the Markey bill pushes states into a regulatory overhaul with uncertain results.

"We don't oppose the pro-competitive features of these bills," said Joe Miller, commissioner at the Idaho Public Utility Commission.

However, Miller explained that trying to redefine universal service in the face of competition will be a huge challenge.

Also, broad rate rebalancing between business and residential services will be required in each state to address the new laws, Miller noted.

Tom Beard, president of Tallahassee, Fla.-based consultancy TMB Associates and a former Florida commissioner, said introducing unimpeded competition into traditional local monopolies will mean reviewing the usual practice of letting business rates subsidize residential rates.

MILLER

But at the same time, an amendment introduced by Rep. Billy Tauzin (D-La.) to the Markey bill would freeze service rates at current levels.

"All of this is going to be a lot of work for the states," explained Sharon Nelson, chairwoman of the Washington Utilities and Transportation Commission. "We're concerned about the intent and import of the Tauzin amendment."

HOLLING'S MARK

In a way similar to the Markey bill, the Hollings bill usurps state authority by abolishing state and local statutes on the books "prohibiting the ability of any entity to provide interstate or intrastate telecommunications services."

There are about 20 states that still have laws prohibiting competition in local service.

GORDON

Allowing local exchange companies into long-distance, a possibility raised by a third bill, The Antitrust Reform and Communications Act of 1994, doesn't worry regulators in Massachusetts, said Kenneth Gordon, chairman of the Massachusetts Department of Public Utilities. But it will mean more state regulation to prevent illegal cross-subsidies.

As if all these changes at once weren't enough, the Clinton administration is proposing its Section VII addition to the Communications Act to have the FCC create a new regulatory regime for broadband services.

The White House wants to tack its Section VII addition onto an existing piece of telecommunications legislation. "I don't like it much," Gordon said. "It gives companies deregulation in exchange for investment in a specific area. Investment should not be driven by trying to escape regulation."

Both House bills, which sailed through committee approval, are likely to go to the House floor later this month a vote. No committee action has been taken on the proposed Senate bill.

Bureau

Continued from page 25

cap regulation, the RBHCs' temptation to subsidize offspring will be reduced since they will not be able to recover costs from ratepayers, he said.

"We are vigilant that the costs reflected in the rates paid by consumers reflect the costs of providing service," Metzger said.

Former FCC Chief Richard Wiley said he believes possible structural separation between parent companies and new operations would also help the bureau. The return to structural separations could give government officials more opportunity to keep track of cross-subsidies, if at a price, he said.

"They do create inefficiencies, but...is there a need for them that overrides that?" Wiley asked. "We still have a local exchange monopoly, [so] they're a useful tool."

NETWORK ACCESS

Aside from long-distance competition, Congress' proposed legislation also aims to open up network access.

The FCC's original attempt at giving third-party providers access to RBHC networks was the Open Network Architecture (ONA) proceeding. Under ONA, the commission attempted to tease apart bundled elements, breaking down service feature groups into basic serving arrangements and basic service elements.

But ONA resulted in little real savings, according to Susan Gately, vice president at Economics and Technology, Inc., a research firm based in Boston.

The RBHCs wound up pricing the unbundled option at about the same level as the original feature groups, undercutting ONA's original intention to allow the purchase of individual service elements at lower rates, Gately said.

"Hopefully, the fact that ONA evolved into a structure that nobody wanted to buy will teach a lesson," she said.

The ultimate goal in both the commission's proceedings and Congress' proposed legislation is to have interconnection in all instances where it is technically feasible and economically reasonable, according to Metzger.

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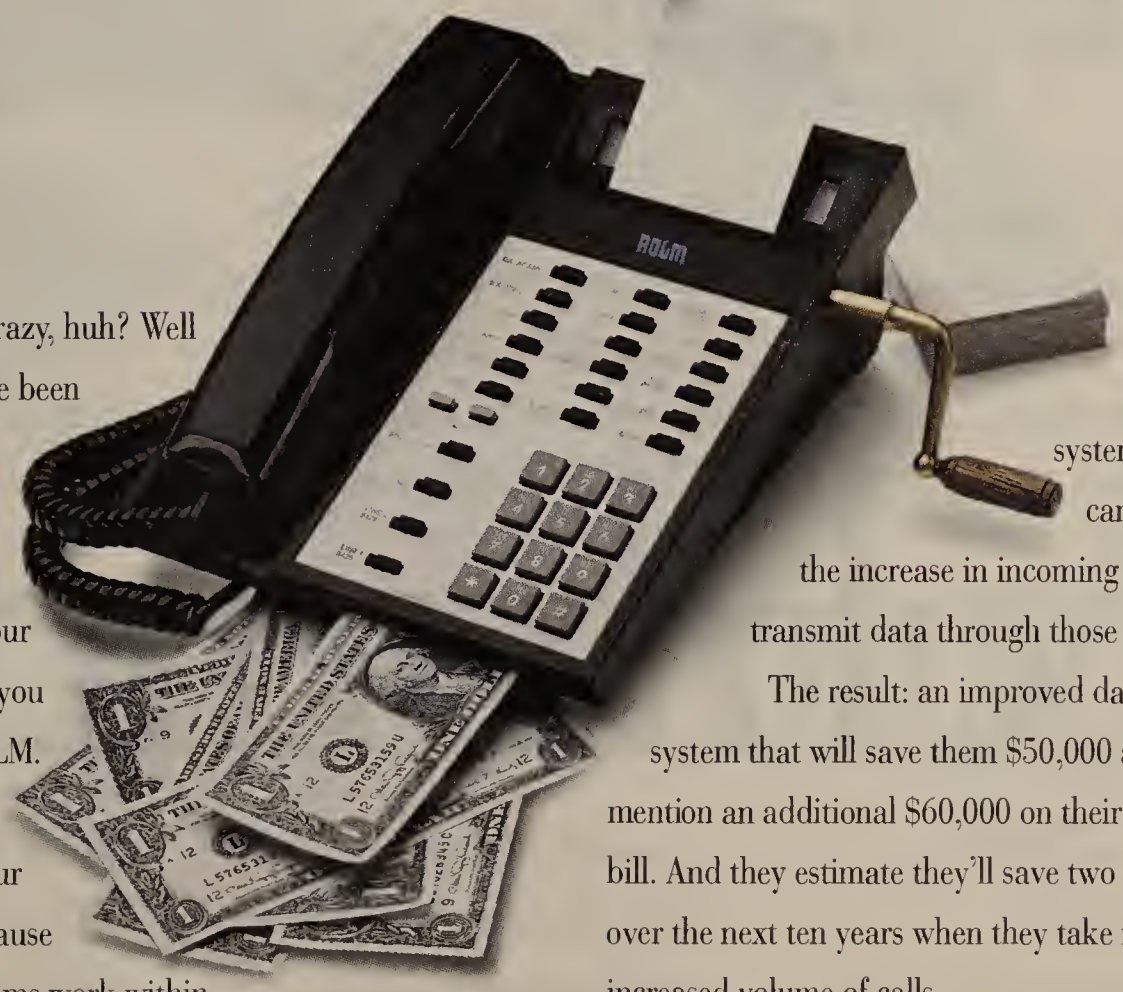

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RATE & TARIFF MONITOR

by Eric Paulak

What's wrong with doing a little math?

AT&T has revamped the rate structure of its high-capacity access services from mileage-based pricing to area code- and exchange-specific pricing, also called "NPA-NXX" pricing.

And just like when it dumped mileage-based pricing for its T45 services, AT&T has jacked up its rates, effective April 7, on just about every service with Accunet in its name and on any services that require dedicated access — such as Megacom, SDN and InterSpan.

All this in the name of "making it easier for customers to figure the rates." Here's what the change in pricing entails and how much and where it will cost you.

Under AT&T's mileage-based pricing, you just had to know how many miles it was between you and AT&T's point of presence. You multiplied that times the same rate that everyone else in the country paid, and that's how much you owed. Finding the rates was easy. You either called your rep or you looked at one page in AT&T's Tariff #11.

A little more difficult was figuring the mileage. You could ask your AT&T rep or do it yourself by plugging the vertical and horizontal coordinates for the serving wire center into a formula.

Under AT&T's new plan, you simply have to look up your NPA and NXX in AT&T's new 1,800-page tariff, which lists specific prices for all NPAs-NXXs. The problem with going with specific pricing, however, is that if you don't have the tariff, you can't find the rate.

So why the change to the pricing schemes? Ulterior motives. One being it's a great way to hide a rate hike. For T1.5 access, for example, AT&T admits to an overall rate increase of about 1%. But for some of you, it's much higher.

In Dallas' 214/233 NPA-NXX, for example, the increase for just the line is 9.2%. Access connection fees for T1.5s went up as high as 10.6% to $260 a month. And the access coordination function — that fee for a long-distance carrier to buy a line from a local carrier — went up 9% to $85 a month.

Coupled with the change, AT&T also raised the rates on other services: Accunet Spectrum of Digital Services and Dataphone Digital Service are going up an average of 2% to 3.5% and software and training for Accunet Bandwidth Manager are going up 13% to 20%.

To offset some of these rate hikes, AT&T is offering one hour of free use for its Bandwidth-on-Demand; that amounts to $100 to $150 a month. Plus, Generic Digital Access rates have gone down an average of 3%.

Another ulterior motive for the switch to specific pricing is that it positions AT&T to be able to price its high-capacity services based more on market conditions. That means users in the areas where AT&T has the most high-capacity traffic — large metro areas — could end up paying less for T-1s than what those in a more suburban or rural area might pay.

AT&T hasn't made that change yet but is strongly considering it, says T1.5 and T45 Product Manager Larry Lang. Before that, however, AT&T has to convert its T1.5 interoffice channels to city-pair pricing. That could come as early as midyear, depending on user reaction to the T32 and T45 city-pair pricing.

That could mean price breaks, if you're in a large city. But it could also signal a rate instability and an inconsistent national pricing plan.

By going with specific pricing, long-distance carriers are positioning themselves to use the three main rate zones the local carriers have for volume and density pricing for local access. That would help stabilize rates and make them more consistent.

Paulak is associate publisher for the Center for Communications Management Information in Rockville, Md., a provider of rate and tariff information. He can be reached at (301) 816-8950, Ext. 327.

BellSouth

Continued from page 25

In the New York area, Di Iorio relies on a series of fractional T-1 lines to connect several small offices and a couple T-1 links in order to reach large offices. With that mix of connections, Di Iorio said he would like to see low-speed SMDS from his carrier.

For such users, low-speed SMDS could be a better fit for some applications. With lower speeds, less expensive service and customer premises equipment, network managers will be able to handle the cost of connecting workstations directly to an SMDS DSU/CSU, rather than aggregating traffic via a router. They could run individual point-to-point connections directly through the SMDS net, which would do the switching, Nolle said.

T-1 is just too big a pipe for most users' current needs, according to Steve Taylor, president of Distributed Networking Associates in Greensboro, N.C. "Speed does not seem to be the burning issue," he said. "People are interested [in low-speed SMDS] to save money."

While some RBHCs, such as NYNEX Corp., are concentrating on rolling out Asynchronous Transfer Mode service, other carriers are more active with SMDS. Ameritech has been one of the leaders of low-speed SMDS with service in Chicago, Detroit and Indianapolis since January. Ameritech charges a flat rate of roughly $200 per month for the service.

Pacific Bell will reportedly announce service next month. Among long-distance carriers, MCI offers low-speed SMDS in selected regions.

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George Gilder, author of *Microcasm*

BANDWIDTH AND PUBLIC POLICY

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April 14, 1994, 1 - 3PM ET

A new videoconference on the world-wide telecommunications infrastructure featuring an all-star panel of experts debating future opportunities and obstacles awaiting on the "data highway" of the future. Panelists include George Gilder, noted futurist (pre-taped); Robert Heldman, Director of Technical Strategies for US West; and Richard E. Wiley, former Chairman of the Federal Communications Commission.

Ed Krol, author of *The Whole Internet User's Guide and Catalog*

INTERNET: A PRACTICAL APPROACH

May 5, 1994, 1 - 4PM ET

Ed Krol, author of *The Whole Internet User's Guide and Catalog*, guides participants through a complete introduction to the "network of networks" that is rapidly becoming the standard by which the "information superhighway" will be built.

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BRIEFS

KnowledgeWare, Inc. of Atlanta will package **object-oriented application development** tools from **Digitalk, Inc.** of Santa Ana, Calif., under an agreement announced last week.

KnowledgeWare currently sells model-based computer-assisted software engineering software. Digitalk's Parts Assembly and Reuse Toolset helps developers build client/server applications for OS/2, Windows and Windows NT platforms. Its PARTS Workbench is a Smalltalk environment for Windows, DOS, OS/2, Windows NT and Macintosh platforms and includes the Team/V group and programming tool.

The two companies said they are working on an application in which applications developed with KnowledgeWare's Application Development Workbench, Planning and Analysis models can be turned into SQL statements and objects usable with Digitalk applications.

KnowledgeWare: (404) 231-8575.

Lotus Development Corp. recently began shipping a version of its Notes groupware application for **Novell, Inc.** NetWare networks.

Lotus's NetWare Loadable Module (NLM) Notes server for NetWare 3.11 and 3.12 performs the same file and database management as its existing Notes servers for Windows, OS/2 and Unix.

The server can communicate with Notes clients via Novell's Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) and via Transmission Control Protocol/Internet Protocol. It also allows for remote connections via modem.

A version for NetWare 4 is expected in the second half of 1994. Lotus is looking to add support under Notes for shadowing of Novell directories.

Pricing for NLM Notes starts at $495.

Lotus: (617) 577-8500.

Retix of Santa Monica, Calif., last week began shipping a version of its **X.400 gateway** for Novell, Inc. NetWare networks.

Retix X.400 for NetWare Global MHS is a NetWare Loadable Module designed for Novell's Global Message Handling Service and lets NetWare users exchange files with users of X.400 networks and front ends.

Pricing starts at $4,995.

Retix: (310) 828-3400.

XDB Systems, Inc. has announced that XDB-Link 3.2 will support IBM's newly announced System/390 Parallel Query Server.

XDB-Lin is a **gateway** software product that allows personal computer users to access **mainframe databases,** including those that support IBM Distributed Relational Database Architecture and Microsoft Open Database Connectivity specifications.

For network users, access to IBM Parallel Query Server will mean a drastic reduction in time needed to query large on-line databases.

XDB-Link 3.2 is available at prices ranging from $8,500 to $66,000, depending upon the size of the mainframe.

XDB: (301) 317-6800.

X.400 vendors join gateways

Control Data and Worldtalk combine their competing E-mail software.

BY ADAM GAFFIN

Control Data Systems, Inc. and Worldtalk Corp. said last week that they will integrate their competing X.400 products and sell them as a single unit.

The companies will work to put Control Data's Mail-Hub X.400 software and Worldtalk's Worldtalk 400 software together on SunSoft, Inc. Solaris-based servers.

Meanwhile, Control Data announced last week that it will add support for Hewlett-Packard Co.'s OpenView network management software to Mail-Hub.

Mail-Hub is a backbone server and includes a message transfer agent for providing electronic mail transport across a net work.

The product is positioned as the key component of an X.400 network to connect hosts with local-area network-based E-mail systems.

Mail-Hub also includes a directory service based on X.500 distributed directory specifications as well as a Simple Mail Transport Protocol gateway.

Worldtalk 400 is a messaging switch that offers address synchronization among a variety of LAN-based E-mail packages. End users can address E-mail in whatever fashion they are used to without having to worry about the addressing system used in the recipient's system — through the use of both translation tables and a rule-based translation system.

Both companies emphasized that they would remain independent entities. They said the move makes strategic sense but has nothing to do with a wave of consolidations and impending price reductions in the X.400 or broader E-mail markets.

SIMILAR DEALS

For Worldtalk, the deal is similar to ones it has reached with other companies selling X.400 message transfer agents.

The firm's Worldtalk 400 software is made up of a series of services designed to run atop an X.400 messaging transfer agent such as Mail-Hub.

It also currently works with X.400 systems from Isocor and HP.

X.400 integration

What new partners Control Data and Worldtalk bring to the table:

Control Data: An X.400 and SMTP message transport server, as well as gateways to various E-mail systems.

Worldtalk: A messaging integration switch with address management and directory synchronization.

THE AGREEMENT

The Control Data agreement differs from other Worldtalk alliances in that Control Data will not only bolt Worldtalk 400 to its Mail-Hub, but will also integrate Worldtalk LAN-based E-mail gateways with it, said David Atlas, director of marketing at Worldtalk.

Control Data, a systems integrator, plans to begin offering the new Mail-Hub/Worldtalk server in the third quarter.

The package will be available from Worldtalk, although Control Data is expected to market it more aggressively.

MUTUALLY BENEFICIAL

Greg Cline, director of network integration and management services for the Business Research Group consultancy in Newton, Mass., said the deal benefits both companies, as well as users with heterogeneous networks.

Control Data gets an increased number of gateways to LAN-based E-mail systems, while Worldtalk gets access to Control Data's X.500 directory technology.

See **X.400**, *page 35*

Scopus releases new version of data system

BY PETER LISKER

Emeryville, Calif.

Scopus Technology has introduced a new version of its client/server-based automated customer information system that now supports Oracle Corp. databases, several work flow modules and peer-to-peer communications capabilities.

ProTeam 3.0 is an application designed to let users combine existing databases with new work flow capabilities to better track and manage customer information and problem-resolution data.

In addition, the product now enables users of the application to communicate with one another in a peer-to-peer fashion without having to rely on the database server. Communication takes place across Transmission Control Protocol/Internet Protocol links.

A COMPETITIVE ADVANTAGE

ProTeam 3.0 can help provide users with a competitive advantage, said Ori Sasson, chief executive officer at Scopus.

"Customer support is no longer just an afterthought for many companies, but, in fact, can be a profitable service that differentiates companies from

See **Scopus**, *page 35*

IMAGING CONFERENCE

Imaging firms become more open at AIIM show

BY KEVIN FOGARTY

Imaging vendors next week will have the chance to showcase their continuing attempts to make their products more open and to bring host-like imaging capabilities to local-area networks.

The Association for Information and Image Management (AIIM) Show and Conference in New York will serve as a platform for product announcements and demonstrations by numerous companies, including Kofax Image Products, Inc., Network Imaging Systems (NIS) and Cornerstone Imaging, Inc.

As announcements at the show will support, imaging and document management vendors are being forced to open their systems and integrate them with applications and platforms from larger vendors, said Tom Koulopoulos, president of the Delphi Consulting Group in Boston. Customers are look-

See **AIIM**, *page 35*

AIIMing to please

Imaging conference product preview

Company	Cornerstone	Kofax	NIS
Product	InputAccel	Ascent Capture and Ascent ViewManager	1View
Price	Not available	$10,000-$20,000	$40,150 for 10 users
Availability	4Q 1994	Summer of 1994	Now

What was a velociraptor doing on the Pacific Bell Communications Superhighway?

Making movies, of course.

Things are moving pretty fast on the Communications Superhighway. Last year 65-million-year-old dinosaurs hopped a ride as part of the first real-time video transmission for production of a major motion picture. This year they've been joined by doctors, students, scientists and business people of every type. Teleradiology on the superhighway is enabling physicians in different cities to simultaneously collaborate on diagnoses. Students have visited on-line with NASA. And we're helping form consortiums of major companies to develop "virtual" communities, linked by fiber optics and unlimited ideas. It's all real, it's here, and it's moving faster than a herd of hungry velociraptors.

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and Networks Expo, Booth 426 (San Francisco, April 19-21).

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MESSAGING STANDARDS

Microsoft to lead vendors in new E-mail management forum

BY ADAM GAFFIN

Redmond, Wash.

Microsoft Corp. will formally launch a vendor group that will try to develop standards for managing enterprise electronic mail networks.

Just how open the group will be is subject to debate given that a spokesman for Lotus Development Corp., which sells the market leading cc:Mail and Notes messaging products, said Lotus was not asked to join.

Then again, even if Lotus was asked, the spokesman said Lotus likely would decline.

E-mail management has become a major concern for network managers as they attempt to coordinate heterogeneous E-mail networks and as users begin to deploy work flow, document management and other sophisticated applications atop messaging transports.

Although most vendors offer management tools for their own E-mail systems and network applications, users have just a few options for managing heterognous networks from within a single system.

Sending a message

Initial members of the Messaging Management Council include:

- AT&T Global Information Systems
- Collabra
- Isocor
- MCI Telecommunications
- Microsoft

The new Messaging Management Council, to be introduced at the Electronic Messaging Association's (EMA) annual conference next week in Anaheim, Calif., will bring together software, switching, wireless andtelecommunications vendors.

THE MISSION

The council's goal is to push for development of a management and monitoring framework that would let users oversee a heterogeneous messaging net over a wide area.

Initial members include AT&T Global Information Systems, Collabra Software, Inc., Isocor and MCI Telecommunications Corp. A Microsoft spokeswoman said additional companies will signal their support in coming days.

LOTUS' GROUP

The Lotus spokesman said the EMA already has its own working group concerning management issues. Lotus plans to stick with that effort, in large part because it includes both users and vendors, the spokesman said.

However, David Knight, vice president of marketing for Isocor, said the EMA committee served more as a watchdog, and the new council will actually seek to drive development of management standards.

Got a problem?

Having trouble with a product or service? Call *NW*'s Reader Advocacy Force Hotline at (800) 622-1108, Ext. 487, or access the R.A.F. Forum on our BBS (see page 2). On the Internet? Contact nwraf@world.std.com.

Scopus

Continued from page 33

competitors," he said.

ProTeam 3.0 consists of a server component that stores customer information in a database repository. This component handles SQL queries, among other things. The software previously supported only Sybase, Inc. databases, but now it supports Oracle systems, as well.

The server component runs on Unix- and Windows NT-based servers, and will also run on Sun Microsystems, Inc. Solaris- and IBM AIX-based servers by July.

The client piece of ProTeam 3.0 includes a graphical front end and customer information modeling code. The client software runs on Macintosh, Unix and Windows desktops.

Scopus ProTeam 3.0 enhancements

- Support for Oracle databases
- Integration of telephony information
- New business process modeling
- Enhanced search and retrieval of customer data

TRACKING SOLUTIONS

ProTeam now includes client work flow modules that enable users to track problem resolution, create alerts within the system to automatically escalate problems to higher levels, and schedule actions designed to keep internal support staff and customers aware of problem reporting status. The system allows users to specify 'if/then' rules for dealing with support situations, which are then translated by ProTeam into SQL statements for use in the database.

The new version of ProTeam also includes support for automatic call distribution (ACD) technology from AT&T, Northern Telecom, Inc. and Rolm. By integrating ProTeam with ACD systems, the Scopus software can automatically creates an audit trail showing responses to a problem call or customer inquiry.

SMARTSEARCH FEATURE

Another major enhancement to the product is a client-based SmartSearch feature that resides in the ProTeam client problem-resolution module. This feature uses an intelligent search algorithm to help users locate and retrieve data from the server-based database. With it, users can find the most often-used documents for a given situation, reducing the response time for queries made over the network.

"Applications like Scopus' ProTeam are a great example of how client/server technology can fundamentally change the way a business functions by providing information that would be difficult to program in a traditional computing environment," said Jan Lewis, president of Lewis Research, a Sunnyvale, Calif., consulting firm.

"The fact that ProTeam has been designed to work in a client/server arena means that Scopus can continue to enhance the product with new features without disrupting existing users," Lewis added.

ProTeam 3.0 costs about $50,000 for a 10-user system, based on a per-concurrent user model.

✆Scopus: (510) 428-0500.

X.400

Continued from page 33

Worldtalk also gains access to SunSoft operating systems environments — its products currently run on HP's HP-UX and The Santa Cruz Operation, Inc.'s SCO Unix systems. Mail-Hub currently also comes in an HP-UX version.

MANAGING THE CONNECTION

Separately, Control Data announced support for OpenView — the company's Mail-Hub offering already had supported the Simple Network Management Protocol on which OpenView is based.

OpenView, designed for Open Systems Interconnection and Transmission Control Protocol/Internet Protocol nets, will add such tools as a graphical user interface for monitoring and controlling a heterogeneous enterprise E-mail network.

"People expect their mail to flow from end to end instantaneously and reliably 100% of the time," and more sophisticated tools are needed to help ensure this, said Bob Anderson, director of Mail-Hub product marketing for Control Data.

Control Data said possible uses of OpenView would include management of directory user agents that manage messaging setup and configuration.

Business Research's Cline said such management becomes vital as E-mail networks grow more complex. He predicted that other E-mail vendors will also add support for major network management tools.

✆Control Data: (800) 257-6736; Worldtalk: (408) 399-4024.

AIIM

Continued from page 33

ing for an integrated operating environment, rather than picking best-of-breed applications with proprietary elements, he said.

THE FUTURE OF IMAGING

Deciding that the future of imaging lies in the wide customer base and increasing power of Novell, Inc.'s soon-to-be-completed Image Enabled NetWare 4.0, Kofax will demonstrate two applications designed for high-volume document capture and retrieval.

Ascent Capture and Ascent ViewManager provide a Windows-based input and retrieval client front end that uses Image Enabled NetWare on the server to handle back-end optical storage and file management.

Capture handles scanning, optical character recognition (OCR) and indexing.

ViewManager retrieves and displays documents, lets users store pop-up notes or freehand notations to the documents, and appends spreadsheet and other file types to them to improve work flow.

Although it lacks any real work flow capability of its own, ViewManager does make documents accessible through most major work flow applications, such as those from Reach Software Corp. and Beyond, Inc., and can index them in most major data bases, said Bryan Schacht, the company's director of engineering.

ViewManager supports Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0, Dynamic Data Exchange (DDE), Dynamic Linkable Library (DLL) and a variety of image formats.

LOWERING THE COST

Kofax is trying to bring down the cost of high-volume imaging by using personal computer-based Image Enabled NetWare servers rather than the more expensive Unix boxes used by most client/server imaging systems, said Kevin Drum, director of marketing for the Irvine, Calif.-based firm.

The two Kofax products will probably cost between $10,000 and $20,000 when they ship to resellers in late summer, Drum said. Beta testing on the two products is scheduled to begin in June.

Novell, which will be present at AIIM to help sell its NetWare-based imaging approach to users, is backing Kofax.

Another vendor, Network Imaging Corp.'s subsidiary NIS, will also display an open systems approach to information management by introducing 1View, a suite of applications designed to give users single-interface access to many types of data, including images, numerical data, voice and video.

Although it lacks any real work flow capability of its own, ViewManager does make documents accessible through most major work flow applications.

Included in 1View is a Windows client interface to a file management application on the server. It also supports DDE, DLL and SQL to share data with other applications, and includes modules that can generate work process automation scripts.

Another module gives users point-and-click access to any type of object in an enterprise by automatically launching a viewing or audio application when the user selects an object. Other modules will compress text data, run enterprisewide text retrieval searches, and provide storage and security for engineering documents.

Cornerstone Imaging, Inc. of San Jose, Calif., will preview InputAccel, a front-end integration application for document management systems from companies such as FileNet Corp.

The modular product, which will not be available until late this year, is designed to make it easier for network integrators to put third-party OCR software, scanners and work flow applications together with high-end imaging software.

✆Kofax: (714) 727-1733; NIS: (703) 478-2260; Cornerstone: (800) 562-2552.

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What Happens When Your Branch Router Handles Non-LAN Data?

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MOTOROLA

Editorial

Times are tough for the Information Superhighway, or so it seems.

Judge Harold Greene last week showed he's still a player with a ruling that clouds AT&T's buyout of McCaw Cellular, and Southwestern Bell and Cox Enterprises called off their nearly $5 billion joint cable television venture.

Just a few weeks ago, the mother-of-all-deals, the Bell Atlantic/TCI merger, collapsed under its own weight and concern about the Federal Communications Commission's new round of CATV rate regulation. Time Warner also revealed problems plaguing its multipartner Florida network venture.

Blame it on technological hurdles, regulatory meddling, a stock market gone haywire, whatever — the Great Convergence Landrush has faltered. Some of the pioneers who staked early claims to the multimedia future are pulling arrows out of their reputations, leaving other computer, communications and entertainment companies wary about pairing up for the journey.

Yep, it sure looks grim for the Information Superhighway.

But not really. No one knows yet what the superhighway is or how these deals would have gotten us on the road. The fanfare of Great Convergence has soured, but the future opportunity still beckons.

In the decade to come, improved network facilities — delivered by cable companies, telephone companies or whomever else — will provide new means for reaching consumers in their homes and businesses. Current problems notwithstanding, that will happen, and smart users will figure out now how to take advantage of the expanded capacity and intelligent delivery mechanisms to coddle customers.

But there's the rub. Figuring it out, that is. A network manager with a major aerospace concern told me last week that a strategic issue for his company is understanding how the Information Superhighway will take shape and what his company will be able to do with it.

There are no easy answers, but it's dangerous to wait. As we've reported, companies are already finding ways to use the Internet to do business electronically. That experience will be invaluable in the years to come.

As the financial companies are advising us small investors these days, you have to take the long view. However the future takes shape, you have to be thinking about how the networking of America will change your business and how to turn that to your advantage.

JOHN GALLANT jgallant@world.std.com

TELETOONS FRANK AND TROISE

DISTRIBUTED COMPUTING

by John R. Rymer

Vendor squabbling derails CORBA interoperability effort

The recent squabbling among vendors backing the Object Management Group's (OMG) Common Object Request Broker Architecture (CORBA) specification is a cause of concern for users of distributed object computing technology. This bickering has resulted in the cancellation of an interoperability demonstration, which was to be held at the ObjectWorld trade show in San Francisco in July. The demo's collapse has caused users to question the OMG's ability to define an interoperability standard for distributed object computing systems.

The timing of the CORBA interoperability demo debacle is most unfortunate. The demo net was scheduled to roughly coincide with the OMG's definition of an interoperability standard for CORBA, dubbed CORBA 2.0. Proposals for an interoperability standard were due to the OMG by March 17, and a decision should follow within six to nine months.

The demo could have been used as a rallying point for a single approach to deliver interoperability. At a minimum, the vendors could have used it to test approaches.

Instead, the vendors walked away from the interoperability demo. These vendors include IBM, Digital Equipment Corp., Hewlett-Packard Co., Sun Microsystems, Inc., AT&T Global Information Solutions (formerly NCR Corp.) and HyperDesk Corp. Various groups and pairs of vendors now plan to demonstrate that their ORBs can work together. For example, Sun's operating systems software subsidiary, SunSoft, plans a demo including at least four vendors.

IBM and HP plan to demonstrate interoperability between their CORBA-compliant ORBs in part by using the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) as a common foundation. Digital plans to demonstrate interoperability between its CORBA product, ObjectBroker, and Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0, an alternative to CORBA.

These demos are a far cry from what users want. Is this turn of events a portent of the outcome of the interoperability standards effort? We can only hope it is not, but the story behind the "Interoperability Fest That Wasn't" reveals that reaching an agreement on a standard will be very difficult.

The network used in the interoperability demo was to have been a neutral facility upon which vendors could show how an object on their ORB can invoke an operation on an object on another vendor's ORB. SunSoft offered to donate to the project a demonstration application it had built for its own ORB, first stripping out from the application all mention of SunSoft's Distributed Objects Everywhere technology.

This application did not directly address interoperability between ORBs. Instead, SunSoft expected the vendors to support interoperability by using gateways that translated between their ORBs and one or more of the other ORBs.

Because gateways were involved, the best possible configuration would place one vendor's ORB at the heart of the demo network and all of the other ORBs would access it via a gateway. This would keep to a minimum the number of gateways the vendors would have to build for the demo network.

The other major CORBA vendors balked at this proposal — for three reasons. First, they concluded that by adopting SunSoft's application, they'd risk giving Sun's ORB a tacit endorsement. Second, by adopting Sun's proposal to use gateways, the other vendors thought they would make Sun's ORB a de facto reference implementation for all ORBs. Third, these vendors believe gateways are the wrong approach to interoperability. Gateways can be slow, limit user flexibility to mix and match objects from different ORBs, and add potential points of failure. A demo that relied on gateways, some vendors believed, would be a sham.

This sequence of events is very disappointing. The goal of CORBA was to give users a standard platform for distributed computing that was rich in functionality and robust in operation. All vendors would have an equal opportunity to profit from this technology on the basis of performance, functionality, scalability, manageability and so on.

To reach the goal for CORBA, however, support for interoperability is now required. Users need interoperability to ensure that they can freely choose ORBs from many vendors to meet their needs. It is obvious that users who adopt this technology will end up with multiple ORBs from different vendors.

Unfortunately, the vendors have placed their competitive interests ahead of this common cause. This competition is at the wrong level. CORBA addresses low-level pipes and plumbing. What's really important to users is applications — this is the level at which the vendors will compete for user dollars. A long, drawn-out fight over CORBA won't make it more practical for users to adopt the technology. Rather, a fight will scare the customers out of the store.

Users who really examine what's happening with CORBA do not derive great comfort from all the debates and competitive posturing. Users need a stable platform to get started with this technology.

At this point, the most promising options in distributed object technology come from two vendors. The first is Microsoft, which is implementing distributed object technology as the basis for its forthcoming distributed computing environment, called Cairo.

And then there is IBM. IBM appears ready to break away from the pack at the OMG. IBM's Distributed System Object Model, OpenDoc linking and embedding technology, object storage manager based on Apple Computer, Inc.'s Bento object file format and Taligent development tools are each in an early stage of development. But the four appear to add up to a coherent distributed computing platform. IBM still has the relationships with large customers to support the transition to this technology.

There's one more chance for the powers that be at OMG to rescue the CORBA dream: Agree on a real interoperability solution in CORBA 2.0 without delay this spring. This means that the vendors driving CORBA have to find a way to support users' needs for interoperability between ORBs. To do so will require sacrifice from all vendors for the general good of all.

Rymer is editor in chief of "Distributed Computing Monitor," a monthly report published by Patricia Seybold Group, Inc. of Boston. He can be reached at (617) 742-5200 or via the Internet at jrymer@mcimail.com.

COMMUNICATIONS STRATEGY

by James Carlini

Plan ahead or get left in the dust on the Information Superhighway

How well-positioned is your organization to take full advantage of the Information Superhighway capabilities and emerging multimedia applications that everyone is pitching? What are your firm's current and future access plans for connectivity to the Information Superhighway and its applications? If your company isn't giving serious thought to these issues now, you risk missing the entrance to the Information Superhighway and instead finding yourself in a ditch, on a side street or at a dead end.

Your organization will end up in a ditch if you think you can get by with the network equipment and services you put in place five or six years ago. Many user companies have not found the organizational spark to reengineer their telecommunications networks and buy into emerging services and technologies such as Switched Multimegabit Data Service (SMDS) or Asynchronous Transfer Mode (ATM).

In the last several years, many user companies have been buying and upgrading equipment with the speed of a low-powered econobox with bald tires trying to plow through the mud. The overused management philosophy of "waiting until next year to change things" cannot be applied anymore. A very few smart companies are improving their systems now and becoming more creative in using applications to meet global business demands. However, the vast majority are waiting for someone else's organization to make the first move.

Your organization is definitely on a side street if you have a copper connection to the central office, rather than a fiber-optic connection. Organizations that want Information Superhighway connectivity and capability for large bandwidth must be Synchronous Optical Network (SONET)-ready. This means that anything short of having a fiber-optic cable to your doorstep negates having full capability to take advantage of new and emerging high-speed SONET services. Using copper as the main link to the Information Superhighway means limiting yourself to lower, side street-like speeds of transmission that will restrict the types of applications you can access.

If you are building a new facility or are looking at being one of the first companies to offer new network services to end users, specify to the phone company that you need a fiber-optic connection to the central office. This specification may seem like an unreasonable request when posed to a local operating company representative who still wants you to accept copper. Some phone companies are talking about these new network capabilities like SONET, but they are slow to respond to specific questions and requests about extending these capabilities directly down to the end users. All of the emerging network applications like video on demand, interactive TV and other services may not be accessible if you only have copper as your connection.

While you are at it, also ask for two separate central office connections, preferably to two different central offices. Network diversity is not a luxury — it is essential. Just ask those organizations that have been hit with network outages for extended periods of time due to natural and man-made disasters affecting the central office.

Your organization is at a dead end if you are not recruiting the staff or consulting talent that understands how to take full advantage and apply some portion of these emerging net concepts and services to the needs of the organization. Understanding the impact of new network services and how they can put your organization in a better competitive position should not be taken for granted. Adapting to new ways of conducting business is seldom an easy task. There are many people who do not want to break their old routines and others that do not want to bring in talent that might jeopardize their false sense of security.

If your communications network is at a dead end, your business will soon follow. The markets of today are not as forgiving as the ones of years past. There are still many examples of companies running applications on 12-year-old mainframe systems as well as towns using 25-year-old technology to manage municipal government. These organizations are going to find themselves passed by competitors who are steering their organizations onto the Information Superhighway.

Life cycles for products and network services are becoming shorter. If you miss the window of opportunity for upgrading to new network services, it will be like missing the right entrance onto the Information Superhighway — the next entrance might be miles away. The difference is that your organization may not be able to survive until that next entrance comes up. See you in the fast lane.

Carlini is president of Carlini & Associates, Inc., a strategic information technologies consulting firm in Hinsdale, Ill. He can be reached at (708) 986-1888 or via the Internet at carlini@nwu.edu.

Letters

Kudos on your buyer's guide

Congratulations on your wonderful buyer's guide to 100M bit/sec LAN options (March 21, page 41). It had an excellent mix of technical and implementation aspects.

It would be interesting to revisit this subject in a year when the performances and costs can be better examined. The cynic in me wonders how many of the technologies will pass data at 100M bit/sec and the real throughput achieved when attaching to the legacy LANs, and converting packets between technologies.

Nigel Hawthorn
Product manager
3Com Corp.
London

Seeks report

Ellen Messmer's article "U.S. government sets new course on security" (Feb. 28, page 6) mentions a report called "Security Requirements for Cryptographic Modules," published by the National Institute of Standards and Technology (NIST).

Is this report available on the Internet or directly from NIST?

Dick Schwarz
Senior engineer
Unified Communications, Inc.
Bloomington, Minn.

Editor's reply: According to NIST, you can purchase a copy of this report by calling the National Technical Information Service, U.S. Department of Commerce, at (703) 487-4650 or (800) 553-6847.

When ordering the report, please refer to the "Federal Information Processing Standards Publication 140-1" (FIPS PUB 140-1) and the title.

Cheyenne responds

We at Cheyenne Software, Inc. are extremely disappointed with the recent series of negative articles published in *Network World* regarding Cheyenne products and customer technical support capabilities (March 7, page 1; March 14, page 4; March 21, page 34). We think that the coverage has been one-sided and did not accurately report the facts on a balanced level.

To illustrate, in your March 14 story, you quoted Mr. Don Boccio of Consolidated Edison, Inc., as saying he was dissatisfied with Cheyenne's customer support. Yet in a letter published on CompuServe on March 20, Mr. Boccio thanked one of our technical representatives for his assistance. Mr. Boccio said: "Although your company is not responsible for the SCSI [Small Computer System Interface] board or the Novell, Inc. software, your company showed the responsibility for the system. This is rare in this day of 'finger-pointing' blame. As a result, I highly recommend the ARCserve 5.0 software." He also points out that Cheyenne responded and fixed his problem prior to your article being published. We sent a copy of Mr. Boccio's letter to your publication. It was never reported.

In addition, Mr. Richard Levey, also quoted in your March 14 story, published his comments regarding ARCserve 5.01 on CompuServe. He said: "All in all... I must say that in my opinion, Cheyenne has done a *fine* job with the updates." We have attached a copy of his CompuServe response for your review. Again, this was never reported.

You may not be aware that ARCserve is dynamically linked to every component of a network, and therefore, any problems that may already exist on the network are exposed during the backup process. As a result, Cheyenne's technical sup-

See Letters, *page 40*

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Help desk

Continued from page 2

You may want to check out PageSat, Inc.'s Satellite Delivered Usenet Newsfeed, a receive-only broadcast of Internet bulletin board messages. Usenet Newsfeed allows users to receive full, satellite-delivered news feeds of messages organized into more than 4,500 news hierarchies, or topical discussion groups, on the Internet.

Many of these groups constitute electronic mailing lists on the Internet, Bitnet and other networks to which users post their messages. The news groups are also linked to similar groups on other bulletin board systems and networks like CompuServe, Prodigy and America Online.

Currently, the service covers the continental U.S. and parts of southern Canada and northern Mexico. Coverage in Europe and Asia is planned for the third quarter 1994.

Usenet Newsfeed works with multiuser, multitasking hosts with 286 or higher processors and supports DOS, Unix and Windows host platforms.

PageSat provides most of the required hardware for its news feed service, including a .63 meter (about 24 inches) or larger parabolic antenna with a low noise block converter; the PCSAT 100 desktop unit — a combination satellite receiver/modem, which receives news feed data from the antenna, converts it to asynchronous transmission and then transmits it to the host PC; and an RG-59 coaxial cable, which runs from the antenna to the PCSAT 100. Customers must supply their own RS-232-C cable for connecting the PCSAT 100 to the host PC's serial port.

Prices for the hardware, software and documentation start at $895 ($695 if purchased before May 15). The news feed service costs $30 per month, and the first year of service must be paid in advance.

For more information, call (800) 227-6288 or (415) 424-0384, or send an information request via the Internet to info@pagesat.net.

Letters

Continued from page 39

port capabilities must go far beyond ordinary product support to encompass proper operation of the network environment as a whole. In many cases, Cheyenne acts as a liaison for our customers and takes advantage of our relationships with technology leaders to reach the correct solution for each caller.

In response to your March 21 editorial suggesting that Cheyenne ships incomplete products, ARCserve 5.01 was not shipped in a hurry or as an incomplete product. In just the past three months, Novell, Inc. has released multiple updates to CLIB on NetWare 3.11, 3.12 and 4.01 and revised Btrieve and the Virtual Loadable Module drivers a number of times. In addition, several board manufacturers have released new adapter cards and have revised drivers. With so many fundamental technological changes occurring, some ARCserve customers have experienced compatibility problems. Cheyenne and Novell responded immediately by allowing Cheyenne to redistribute the essential Novell NetWare Loadable Modules (NLM) and installation instructions to eliminate these incompatibilities. This is very unusual as Novell has had a policy since June 1993 that prohibits third-party developers from redistributing their NLMs.

This letter is intended to show our strong sense of responsibility and integrity regarding our products and networking as a whole. We welcome you to send journalists to our headquarters in Roslyn Heights, N.Y., and personally observe our products and our professionals in action, as well as to get a first-hand demonstration of the rigorous in-house testing our products are submitted to before shipment.

ReiJane Huai
President and chief executive officer
Cheyenne
Roslyn Heights

Editor's reply: We stand by these stories, and we're pleased to see that readers' problems are being resolved. Our Reader Advocacy Force was established to help address reader concerns, and that's why we pursued customer complaints regarding Cheyenne's ARCserve 5.X.

The original article, published March 7, stemmed from more than a dozen complaints from users who said ARCserve 5.X products had caused their servers to crash. Both the ARCserve 5.X users mentioned in the letter above contacted us because they were unable to get adequate service and support from the company. It wasn't until we brought these complaints to Cheyenne officials that the company took steps to alleviate their problems.

In our articles, we reported the company's side of the story, including the fact that some users had not experienced major problems and were generally pleased with the product. Cheyenne officials, including Huai, were interviewed for the articles, and their comments were reported. We reported the company's view that the complexities of users' multivendor networks were a contributing factor in the ARCserve 5.X problems.

We reported that Cheyenne was working on an update to address problems with ARCserve 5.X itself and provide additional support for Novell's Btrieve and other third-party device drivers. At the time the second article went to press, that update was not yet available to users. The comments Huai reports by Mr. Boccio and Mr. Levey were posted after they received the updates and nearly a week after our second piece. We're pleased to hear the upgrade is helping them and will continue monitoring the situation.

Groupware request

Your article "Groupware product parade set to march ahead at conference" (Feb. 28, page 4) mentioned a conference called GroupWare '94 and the availability of around 400 groupware-related products. I'm interested in obtaining a list of the groupware-related products available on the market or references to some publication (perhaps the conference program, if there was one) that would provide me with that information.

Rodolfo Pacheco
Systems manager
AT&T
Morristown, N.J.

Editor's reply: A buyer's guide to group collaboration tools, listing some 52 groupware-related products, appeared in the Aug. 9, 1993, (page 47) issue. We will be publishing an updated buyer's guide to groupware/work flow products in our Aug. 29 issue.

For more information on groupware-related products and GroupWare '94, contact David Coleman, chairman of GroupWare '94, at (415) 282-9151. Coleman is a principal with Collaborative Strategies, a San Francisco consulting firm, and edits a newsletter on groupware.

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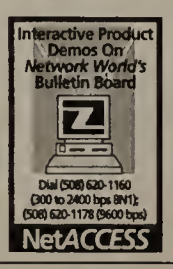

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NetWare Navigator charts bumpy course

Novell's dual-level electronic software distribution doesn't adequately address the needs of some large enterprises, although it interoperates well with companion products.

By HOWARD MARKS and KRISTIN MARKS

Most network administrators find themselves dedicating much of their time to distributing and updating applications on workstations throughout their corporate environments. As much as they would like to simplify life by centralizing corporate applications on a core group of file servers, issues such as performance, security, licensing and the growing legions of road warriors who need to run their applications locally make this a poor strategy.

Novell, Inc.'s NetWare Navigator, part of the Navigator family, provides a measure of assistance by automating the distribution of software across a local-area network. This product family also includes Network Navigator DOS LAN Distributor and Network Navigator OS/2 LAN Distributor, as well as versions for Tandem Computers, Inc. and IBM host computers.

Unfortunately, we found that NetWare Navigator doesn't go far enough in addressing the needs of large enterprise internets. It only supports up to two levels of distribution, it lacks built-in compression, and it does not provide net managers with adequate selection criteria for choosing which client workstations should receive software distributions.

What does set it apart from the rest of the pack is its ability to interoperate with Navigator applications for other LAN and host environments.

CERTIFIED DELIVERY

With Navigator, users can distribute software packages to client workstations or personal home directories on the file server. Each distribution package consists of a contents list, the files to be copied to the user's workstation and a script that tells the Navigator client software what to do with the files after they have been copied. Navigator's script language can, for instance, be used to check disk space, run external programs and update .INI files.

After a package is put together, it can be distributed to a list of target workstations. Navigator will then distribute the packages at the specified time to the client workstations and run the associated scripts.

The Navigator administrator console program, a Microsoft

Continued on page 43

NET Result

Product:
NetWare Navigator 3.0

Vendor:
Novell, Inc.
122 East 1700 South
Provo, Utah 84606
(800) 453-1267

Price:
25 users: $995
100 users: $3,000
500 users: $10,000
2,000 users: $30,000

Platforms:
- Intel 80386 and 80486 servers
- Intel 80386 and 80486 clients

Server requirements:
- NetWare 3.X and 4.X
- 8M bytes of memory
- 14M bytes of disk space

Workstation requirements:
- Client workstation can run on DOS, Windows or OS/2.
- Administration workstation requires Windows.

Key findings:
- NetWare Navigator can interoperate with Navigator servers on Tandem and IBM host computers.
- Navigator's 2-tier distribution architecture is somewhat limiting, particularly for larger networks.
- The user interface does not follow all Windows conventions.
- There are no selectable criteria to tailor distribution.

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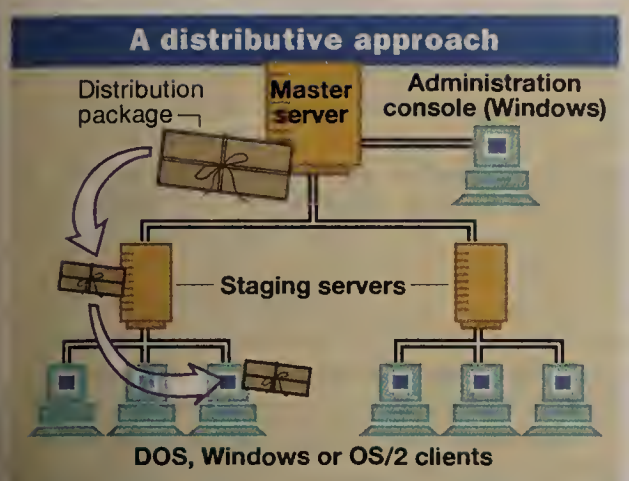
Continued from page 41

Corp. Windows application, is reasonably easy to use, but it would benefit from a few improvements. We found that several of the dialog boxes didn't follow the Windows user interface conventions. For example, we found that Shift-Click worked inconsistently, and there were no Close Boxes on some windows.



NetWare Navigator employs a dual-level distribution scheme. A master server maintains all of the distribution packages and distribution lists. When packages are designated for distribution, the master server sends all the files associated with these packages to one or more staging servers, which, in turn, distribute the packages to workstations.

We also couldn't send a package to multiple distribution lists or NetWare groups, and, most critically, we were unable to cancel distributions once we scheduled them. When we accidentally started a distribution, we had to manually delete the packages to stop the distribution — which is not a straightforward task. We needed to know the name that Navigator automatically assigned to our package — a name that was remarkably different from the name we gave it.

GETTING STARTED

Navigator will run on NetWare 3.X and 4.X servers and requires 8M bytes of memory and 14M bytes of disk space. It supports DOS, OS/2 and Windows clients. Also, the Control workstation requires Windows.

Navigator must be installed on the .SYS volume of the NetWare file server. During the installation procedure, Navigator installs nine NetWare Loadable Modules on the file server. In addition, it creates 36 subdirectories on the file server and updates the server's logon scripts to install three terminate-and-stay-resident (TSR) and Windows modules for users who are designated as distribution clients.

The three client TSRs are Novell's Storage Management System (SMS) target service agent, the scheduler and the script processor. The SMS target service agent lets Navigator distribute data files to the client workstation without user interaction — even when no user is logged on at the workstation. The SMS target service agent also allows a backup program, such as Novell's SBackup or Cheyenne Software, Inc.'s ARCserve, to back up a workstation's hard disk across the network. The three TSRs occupy a total of 17K bytes of workstation memory.

Client identifications have to be defined for every workstation that will be maintained by Navigator. Net managers can create their own workstation IDs, but that means they will have to enter all of the IDs and install all of the client software manually. An easier approach is to use NetWare user IDs (NetWare groups are not supported), which can be selected from a displayed list.

Using NetWare user IDs lets Navigator automatically install the client software. Navigator will modify the user's logon script to install the software the next time the user logs on. Changes to the logon script include the addition of two search mappings.

During our testing, we discovered that, although Navigator was able to modify logon scripts, it wasn't able to undo these modifications in the cases where we changed our mind. When we reselected a user ID for inclusion on a distribution list, Navigator did not check the logon script for existing search mapping entries before adding new ones. The result is a duplication of logon script information. In fact, during our testing, one of our user logon scripts ended up with six duplicate search mapping entries.

Navigator also requires a new user ID for the Navigator console operator, the equivalent of a NetWare Supervisor. Although the manual indicated that we didn't have to create a separate ID for the console operator, the installation program told us otherwise.

The console operator is the user who can create packages, schedule distribution and maintain distribution lists. Only one user can be the Navigator console operator, and Navigator enforces this by limiting the console operator ID to a single logon. Administrators of large networks will find this limitation annoying, at best.

PUSH AND PULL

Navigator supports both push and pull distribution capabilities. Push delivery is initiated by the server via the SMS target service agent. Users do not need to be logged on at a client workstation in order for the workstation to receive a package from the server.

If a package is defined for push distribution but the target workstation isn't available at the designated distribution time, Navigator will redefine the delivery method as a pull distribution after 10 failed delivery attempts. Other than detaching a workstation from the network or shutting it down, there is no way to reject a push distribution from the server.

Pull distributions, which enable client workstations to initiate requests for distribution packages from the server, give users a little more control. At installation, Navigator adds a call to the pull program to each user's logon script. Users can, to prevent the system from tying up their personal computers when they first log on, control the time period during which pull transfers will be attempted. But there is no way for users to selectively reject pull distributions. They can stop or defer all prescheduled deliveries, but they cannot reject a single one.

When a package is distributed to a client workstation, the files defined as part of the package are copied to the destination directories. When defining the package, network managers can specify whether it should replace existing files with the new distribution files. The TSR scheduler ensures that the associated script is executed at the appropriate time. By default, scripts are scheduled to execute at 11 p.m.

The Navigator script language can be used to check for available disk space after the files have been copied, copy files, run application programs, update Windows.INI files and establish some error checking. The script editor box lets users double-click on recognizable words, such as "Copy" files, "Disk Space" and "Edit WIN.INI," while dialogue boxes let users specify values.

For instance, in the Edit WIN.INI dialog box, users can add section headings, key names and values. The script editor then translates this information into an actual script line. Unfortunately, it doesn't know about standard .INI sections, such as System.INI's [386Enh], and doesn't provide a listing of these section headings for users who don't have all of them memorized.

SETTING THE STAGE

Navigator supports two levels of servers for file distribution. The master, or distribution server, holds the package definitions and distribution lists. When a package is sent to a distribution list, the distribution server first makes a copy of the package's files and then sends them to one or more staging servers. These staging servers, in turn, distribute the packages to the client workstations. A single server can act as both the distribution server and a staging server.

This two-tiered architecture is somewhat inadequate for large enterprise internets, especially when compared to electronic distribution systems, such as Frye Computer System, Inc.'s Software Update and Distribution System (SUDS), that offer more flexible architectures.

A large enterprise, for instance, may have three locations in the Chicago area — each with its own staging server — that are linked by T-1 lines and another three identical locations in New York. If the link between Chicago and New York, however, is only a 256K bit/sec line, or worse, a 56K bit/sec line, there is potential for a distribution bottleneck since packages are distributed from a server in Chicago to each staging server in New York, bogging down the slow interstate line with three copies of the same data.

In contrast, an application such as Frye'e SUDS that supports more than two levels of distribution can download a package from Chicago to one New York site. From there, it can be distributed to the other locations in

Continued on page 44

HOW WE *did it*

We installed NetWare Navigator on our AST Research, Inc. 486DX/25 file server with 12M bytes of memory and Advanced Digital Information Corp. disk subsystems. We configured this server as both a distribution and staging server. And we used a Micronics Computers, Inc. file server as a second staging server. For our client workstations, we used J&L Information Systems, Inc.'s Chatterbox NRS, Toshiba Corp.'s T1900 and Dell Computer Corp.'s Dimension XPS workstations. All but one of our desktop clients had Standard Microsystems Corp.'s Elite 16 Ethernet cards. The Toshiba T1900 had a Thomas-Conrad Corp. PCMCIA Ethernet card.

A software distribution checklist: How Navigator compares

Vendor	Novell	Frye
Product	**NetWare Navigator**	**SUDS**
Client support		
DOS	✓	✓
Windows	✓	✓
OS/2	✓	✓
NOS support		
NetWare	✓	✓
VINES	✓(1)	✓
LAN Manager	✓(1)	✓
LAN Server	✓(1)	✓
Pathworks	✓(1)	✓
Distribution controls		
Criteria settings		✓
Logon IDs	✓	✓
Definable custom IDs	✓	✓
NetWare groups		✓
Network or LAN board ID		✓
Distribution routing		
Set path to target servers for later distribution	✓	✓
User name and password initialization		✓
Error logging and reporting		
Logs successful and failed procedures	✓	✓
Predefined reports		✓
Report writer		✓
Exports data		✓
Multiple server support		
Distributes across WANs	✓	✓
Distributes across routers	✓	✓
Scheduling options		
At logon	✓	✓
At logoff	✓	✓
Low peak usage time	✓	✓
Time settings		
Maximum time limit for transfer		✓
Start date and time	✓	✓
Procedures can be distributed to target servers	✓	✓
Other features		
Integration with other management applications		✓
Installs new software	✓	✓
Updates existing software	✓	✓
Removes old software	✓(2)	✓
Compression	✓(3)	✓
Unattended updates	✓	✓
Updates target servers	✓	✓
Automatic text search and replace	Via custom script	✓
.INI file management	Limited	
AUTOEXEC.BAT/ CONFIG.SYS	✓	✓
Pull menus for users		✓
Sends messages to users		✓

FOOTNOTES:
(1) Requires DOS LAN Companion product.
(2) Requires creation of customized script.
(3) Manual compression via PKZIP, which is included in the product.

Continued from page 43

New York across the higher speed lines.

It is possible to set up Navigator so that it treats a distribution server in New York as a staging server from Chicago. But an administrator will have to take each package received in New York and redefine its files as a new package. Then, the New York distribution server's administrator will need to start its distribution to the other New York staging servers.

Although NetWare Navigator includes a copy of PKWare, Inc.'s popular PKZip file archiving and compression package, it doesn't automatically use PKZip to combine the files comprising a distribution package into a single compressed archive file. Users who want to avoid flooding low-bandwidth wide-area network links have to manually create a compressed archive and then use a script to decompress the archive file.

Even with unlimited network bandwidth, this lack of built-in compression is still an important issue. For each package that is sent to a distribution list, a copy of the associated files is made. If a package is sent to multiple distribution lists, multiple copies of the file are made. The problem is that these multiple copies can start to eat up valuable disk space on the server's .SYS volume.

Depending on the package, Navigator may be able to find plenty of space for a "zipped" file but not enough when the file is "unzipped."

Navigator doesn't provide any facility for setting criteria for distribution other than listing the clients in the distribution list. The script language can be used to check disk space and some other parameters, but this facility is quite limited. And because files are copied to the client's hard disk before the associated scripts are executed, users may log on only to discover that their package has been deleted by a script because the client doesn't have the appropriate resources.

Frye's SUDS, in contrast, allows administrators to set specific criteria for software distribution. For example, criteria can be established that permit distribution only to workstations with Intel Corp. 80486 processors and SuperVGA displays.

Distribution criteria ensure that packages will be delivered only to the clients that have the necessary resources, security and settings to run the packages. However, setting criteria based on NetWare groups is only half the battle. Software distribution applications in a PC environment really need an inventory engine — for the collection and storage of data about hardware and software — to provide criteria selection services.

Navigator's lack of support for distribution criteria is partly explained by its pedigree. Navigator is the result of Novell's 1992 acquisition of Annatek Systems, Inc., which had developed a host-based electronic software distribution application. Since host environments are likely to have homogeneous clients, criteria beyond an individual ID is not that essential.

Navigator maintains log files of pending distributions and problem deliveries, but these files are far from explanatory. And the documentation doesn't help much. When we tried looking up the error code associated with a distribution that had a problem, we discovered an incomplete appendix of error codes that grouped ranges of codes under the umbrella description "internal errors."

To further compound matters, the Navigator help screens informed us that our staging server might not have been up. But since we were logged on to our staging server, we disregarded this explanation. Navigator's context-sensitive help can be accessed from any dialogue box by clicking on the help button but not by pressing F1.

NetWare Navigator can integrate with Network Navigator servers on Tandem and IBM host computers running NonStop, MVS or VM operating systems. In these environments, the host computer is typically used as the distribution server, sending packages to the PC-based staging servers across the organization's Systems Network Architecture net.

Although this level of interoperability sets Navigator apart from the other LAN-based software distribution packages, it doesn't compensate fully for some of its shortcomings. For example, the interface needs some improvement. After all, one of the reasons for writing Windows applications is so users will know how to run them because they already know all the keystrokes and mouse clicks. Without this common interface, what's the point?

In addition, software distribution in the real world requires comprehensive inventories of users, groups, net rights, software and hardware. Administrators will have little interest in a product that cannot provide this service or, at the very least, utilize existing inventories maintained by other applications.

Navigator needs more work before it can fully meet the challenges of complex enterprise internets. We hope the next release addresses some of these shortcomings.

Howard and Kristin Marks are principals of Networks Are Our Lives, Inc., a Scarsdale, N.Y.-based network and consulting firm. They can be reached via E-mail at 72240.424 @compuserve.com.

A happy family

NetWare Navigator is part of Novell's family of Navigator products, which also includes Network Navigator DOS LAN Distributor and Network Navigator OS/2 LAN Distributor, as well as Navigator applications for Tandem and IBM host computers. Network Navigator DOS LAN Distributor ranges in price from $225 for a 5-user license to $15,000 for a 1,000-user license. Navigator for IBM and Tandem hosts range in price from $25,000 to $75,000.

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By Paul Longoria
San Antonio, Texas

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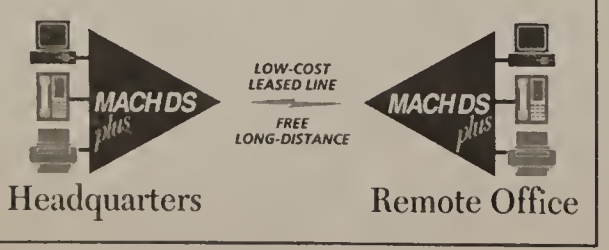

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Portable Document Format: an aid to document swapping

BY JAMES KOBIELUS

Last-minute filers needing tax forms in a hurry this year are spared from dashing off to the nearest post office thanks to the Internal Revenue Service's decision to make the forms available in Adobe Systems, Inc.'s Portable Document Format (PDF), an emerging document interchange format.

Buoyed by that decision, CompuServe, Inc. last month announced that users of its Lotus Notes Information Service can download tax forms to their personal computers, print them off and fill them out. The forms look identical to the ones the IRS prints and distributes. Tax forms in PDF format are also available on the Internet.

PDF is based on a 7-bit ASCII code and Adobe's PostScript page-description language, a near-universal technology for interfacing disparate operating systems and applications to printers. Like PostScript, PDF has been documented and published by Adobe, which is merging with Aldus Corp. Publishing PDF lets third parties build support for PDF in their applications.

With PDF, fully formatted documents containing text, graphics, images and a mix of fonts can be viewed, searched, annotated and printed by computers that lack the operating system and application that created them. For instance, a form created in PDF on a PC can be viewed on an Apple Computer, Inc. Macintosh. However, the PDF file can only be edited by the application that created it.

PDF documents retain their original layout, with the text, graphics and photographs appearing at the highest resolution available on the recipient's monitor, printer or other output device. Design parameters of the original typeface — the size, width and style of characters, for instance — are transmitted with the PDF file so they can be replicated on computers that do not have the original typeface.

PDF files may be transmitted across the network through a user's existing file-sharing, file-transfer, electronic mail or other transports, or manually via CD-ROMs, diskettes or other storage media.

IMPLEMENTING PDF

To understand how PDF works, it's best to examine how it is implemented within products such as Adobe's Acrobat line, which runs transparently across most net and desktop operating environments. The Acrobat family currently runs on Microsoft Corp. Windows, DOS and Macintosh desktops, with a Unix version due this quarter.

There are four Acrobat products: Acrobat Exchange; Acrobat PDF Writer; Acrobat Distiller and Acrobat Reader.

Acrobat Exchange is a general-purpose application that provides tools for viewing, navigating, annotating and printing PDF files, but it has no document authoring capabilities. It also comes with a system-level Acrobat PDF Writer printer driver that can be accessed by applications, and is used to convert and read documents.

Once Acrobat Exchange has been installed on a workstation, users create PDF files by selecting commands needed to print a document. A dialog box appears, giving the user the option of creating a PDF file or sending the document to a printer via a standard PostScript driver.

If creation of a PDF file is selected, Acrobat PDF Writer intercepts the print stream and converts the document to a PDF file. That file can then be stored on a local disk or network server.

For each document, Acrobat PDF Writer generates a new file that contains all text, graphics and image contents; instructions for reproducing the document's appearance and layout; and miniature thumbnail views of pages.

DISTILLING PDF

Another option for creating PDF files is to use either the personal or net version of Acrobat Distiller, which converts PostScript or Encapsulated PostScript (EPS) files to PDF. The personal Acrobat Distiller is installed on workstations and enables individual users to selectively convert PostScript files to PDF. The network Acrobat Distiller is installed on servers and can be set up to automatically monitor network storage devices and directories for new files, convert them to PDF and then move or copy them to new drives or directories.

At the time a PDF file is created, any of several compression schemes — including Joint Photographic Experts Group (JPEG), Lempel-Ziv-Welch (LZW), CCITT Group 3 and CCITT Group 4 — may be applied to it, knocking file size down considerably. Adobe claims that compression ratios as high as 10:1 can be achieved using JPEG. Adobe says using LZW on a PDF file results in a 2:1 ratio. Using CCITT Group 3 and CCITT Group 4 can result in a compression ratio as high as 8:1. Acrobat Exchange and Acrobat Distiller provide default compression settings for text and graphics as well as color, grayscale and monochrome images.

PDF files are decompressed and viewed at the receiving end by any workstation that runs either Acrobat Exchange or Acrobat Reader. Acrobat Exchange enables the receiver to view and annotate the document. Acrobat Reader is a 1.5M-byte viewing, navigation and printing tool, but it does not let PDF files be created or annotated.

If the receiving computer has the original font, Acrobat Exchange or Acrobat Reader will display the document in that font. Otherwise, the original font will be approximated using the typeface parameters in PDF. Acrobat products cannot convert documents back to their native file formats. But since the PDF specification is fully documented, there is nothing stopping software vendors from writing PDF-to-native format-conversion routines.

The recipient of a PDF file can navigate within the document using standard graphical user interface/keyboard techniques — such as scrollbars and control or arrow keys. Alternatively, users can employ Acrobat-specific tools to jump to a page or section of the PDF document by mouse-clicking on its thumbnail representation, outline entry or hypertext link.

With Acrobat Exchange, users also have the option of creating textual annotations called electronic sticky notes that can be attached to sections of the document. The document can be returned to the creator who can read the notes and use the generating application to make changes. Acrobat Exchange can also be used to create a table of contents, document outlines, indices and internal hypertext links to each PDF file.

Thumbnails, outlines and hypertext links can be used only to navigate between sections and pages of an individual PDF document. Acrobat Exchange does not yet have the capability to navigate within groups of PDF documents, either on a single machine or across a network. However, Adobe plans to introduce a new Acrobat product later this year that uses technology licensed from Verity Corp. to support full-text searching across many PDF files on a network server. Adobe will also publish its PDF text-search application program interface later this year so other software developers can build similar network-based PDF-text-indexing tools.

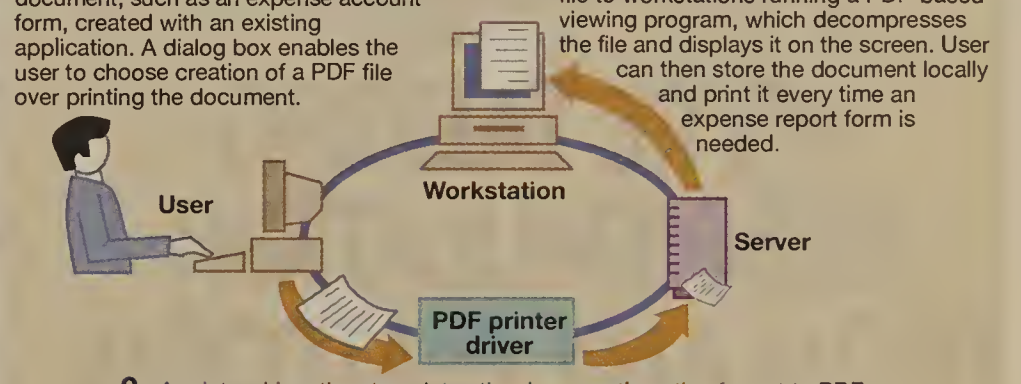
Adobe's PostScript-based technology and industry visibility give Acrobat and PDF a leg up on competing cross-platform document distribution technologies such as Farallon Computing, Inc.'s Replica and No Hands Software, Inc.'s Common Ground. Replica is based on TrueType, which was codeveloped by Apple and Microsoft. Common Ground is based on No Hands Software's proprietary DigitalPaper file format.

The best indicator of PDF's future direction may be Adobe's announced strategic alliances with software developers, information service providers and electronic publishers.

Lotus Development Corp. upgraded its Notes groupware product to incorporate PDF technology, which will allow Windows or Macintosh users to create, exchange, store and view PDF files within the Notes environment. Multex Systems, Inc. uses PDF to distribute financial reports over its net. Knight-Ridder/PressLink, Inc. and Business Link announced they will also distribute fully formatted PDF documents over their nets.

Transparent, cross-platform document communications is the wave of the future. Soon, capabilities such as PDF will almost certainly be supported on every network node. It won't be surprising to find cross-platform file converters and viewers like PDF or a competitor bundled with desktop operating systems or burned into read-only memory on personal digital assistants.

Document exchange via PDF



GRAPHIC BY SUSAN SLATER

SOURCE: ADOBE, MOUNTAIN VIEW, CALIF.

Kobielus, a contributing editor to *Network World*, is a senior telecommunications analyst with Alexandria, Va.-based, Dyn Network Management, Inc., a systems integration and consulting firm. He can be reached at (703) 922-6829.

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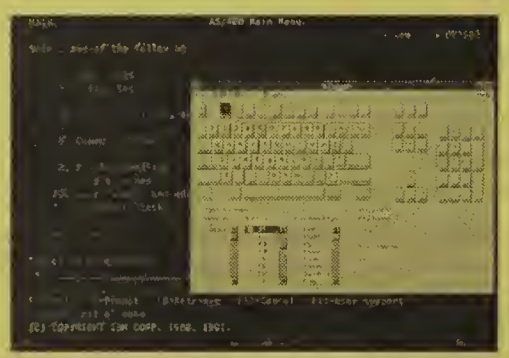

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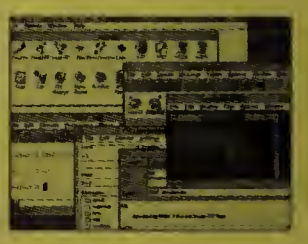

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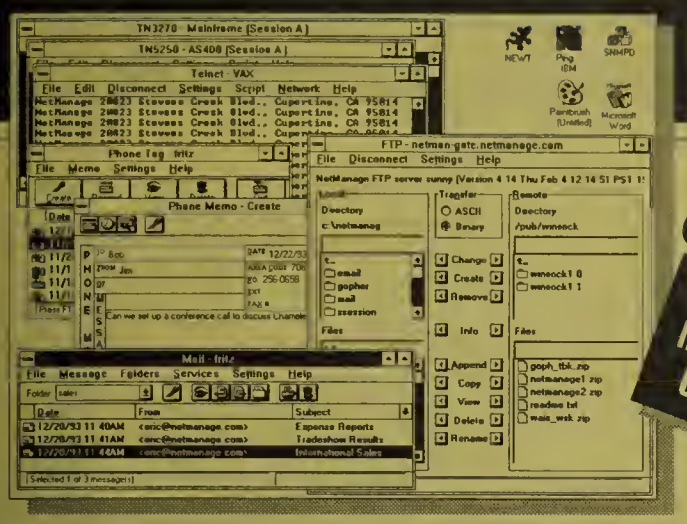

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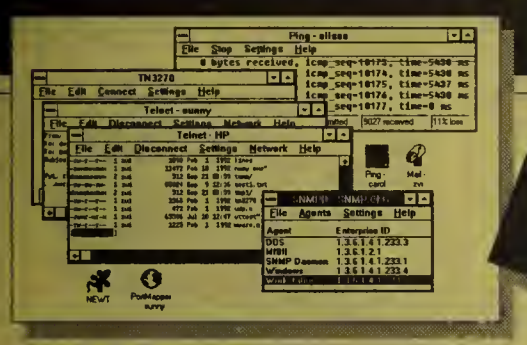

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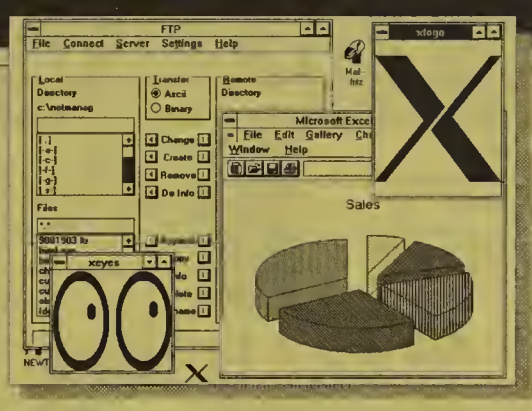

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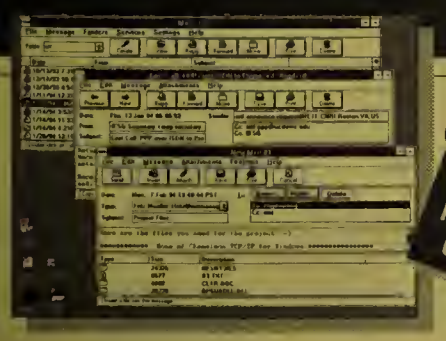

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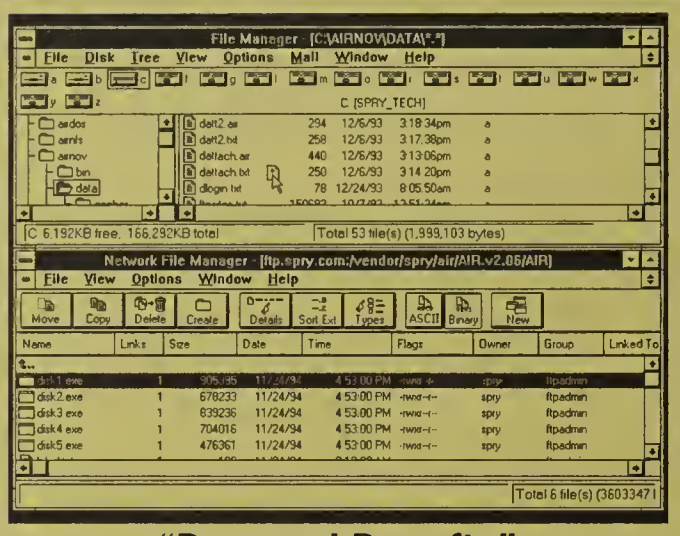

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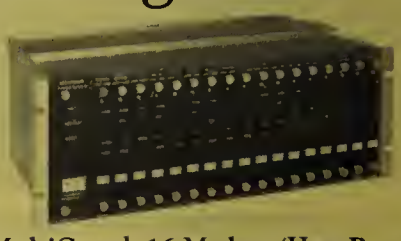

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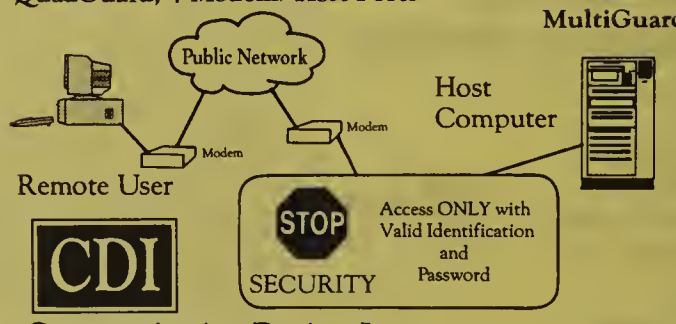

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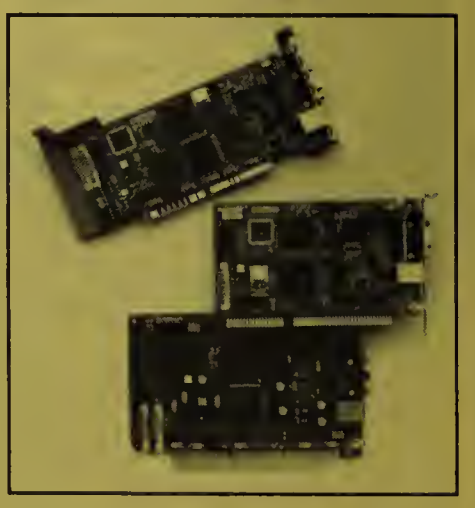

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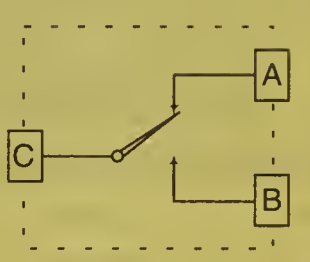

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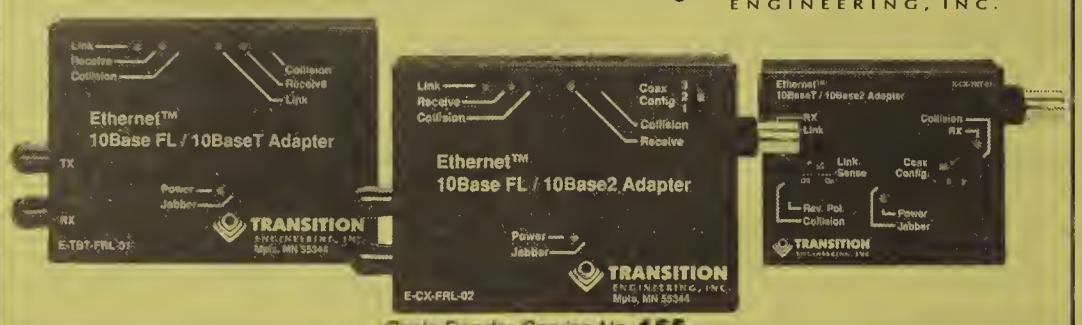

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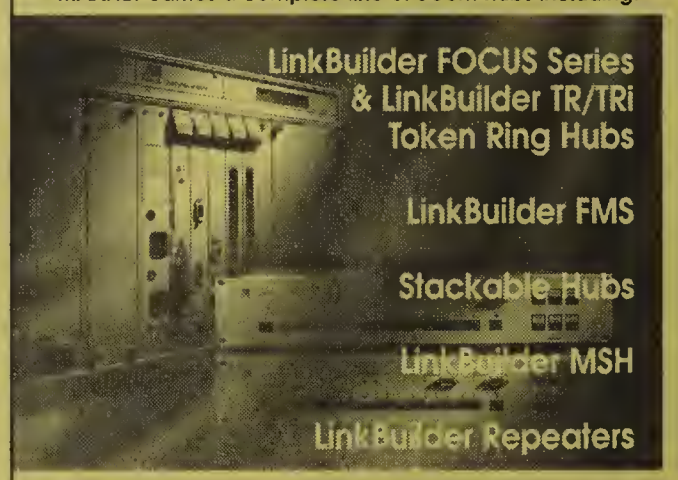

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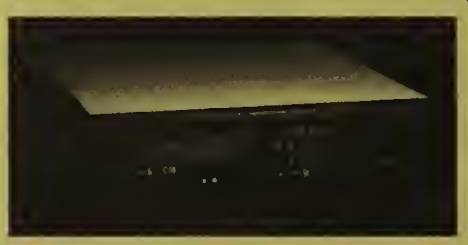

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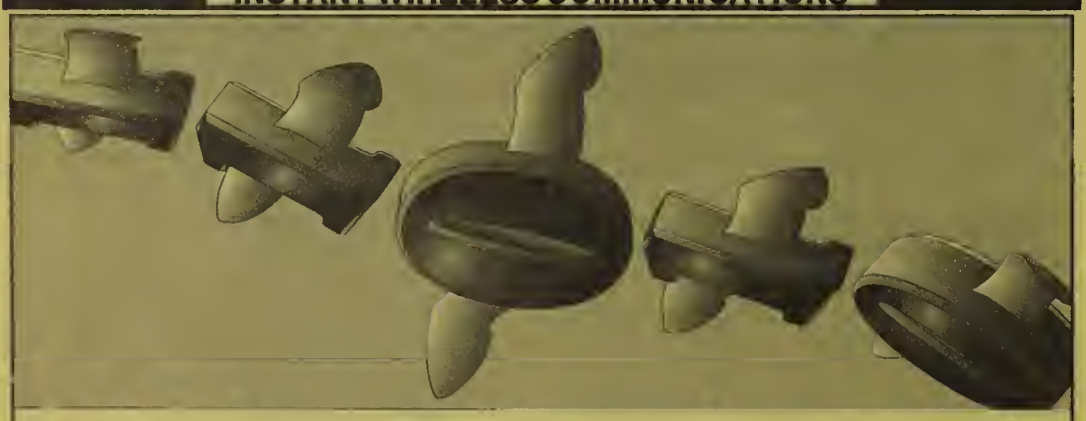

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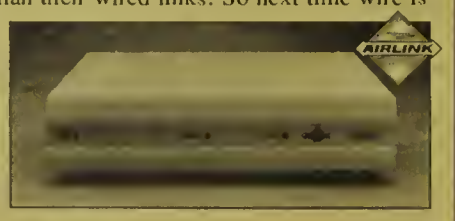

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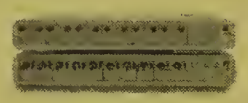

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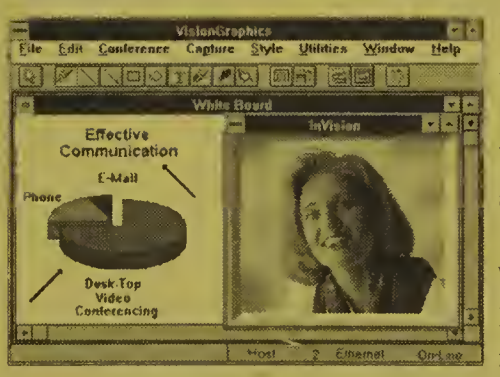

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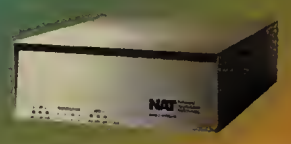

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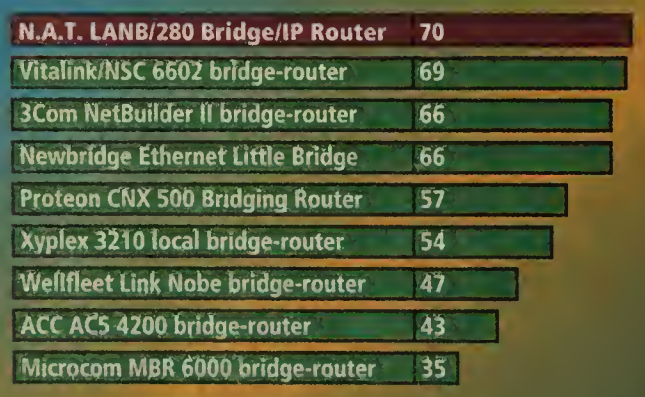

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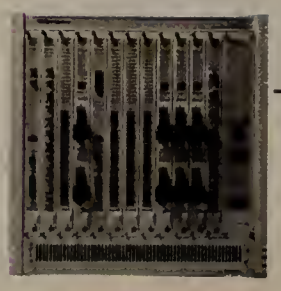

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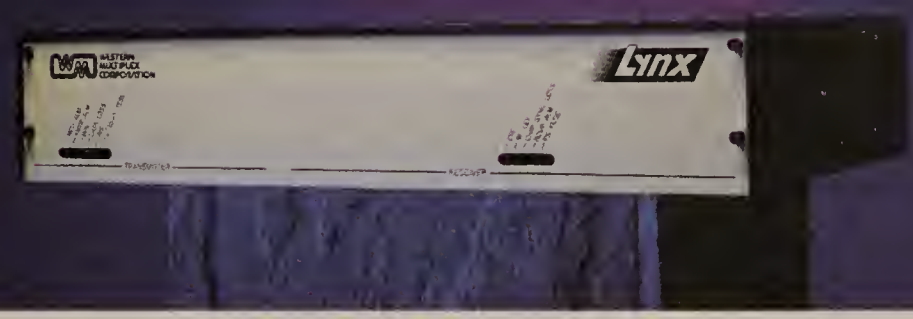

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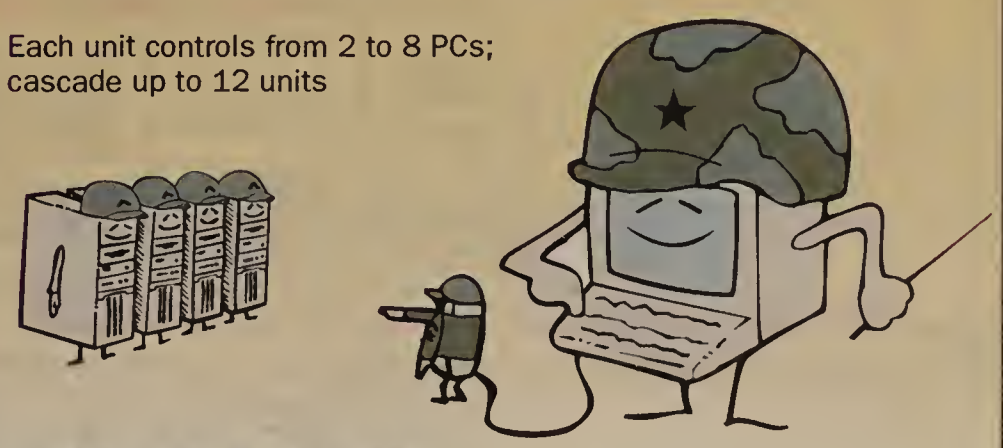

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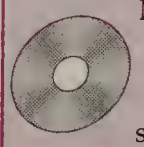

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Microsoft

Continued from page 8

than Lotus Notes?" she asked. "Sure. But you have to [have collaborative software]. So far, I haven't seen or heard anything [from Microsoft] that fills in that piece."

AND IN OTHER NEWS

A series of other companies will also announce new products and services at the conference. These include:

■ **Alisa Systems, Inc.** will announce a gateway between WordPerfect Office and its Alisa Mail messaging and directory system. Pricing and availability have yet to be announced.

■ **Bellcore, Inc.** will demonstrate X.500 tools for creating and managing a distributed directory system.

■ **Digital Equipment Corp.** will announce OSF/1 and Windows clients that will let users connect to mainframe electronic data interchange systems.

■ **Hewlett-Packard Co.** will announce a new version OpenMail that supports the remote version of Lotus' cc:Mail and 1998 X.400 standards.

■ **OSIWare** will announce a messaging switch for synchronizing electronic mail directories between proprietary E-mail packages.

ATM options

Continued from page 9

switches interoperable and allow users to employ SVCs across the enterprise in order to interconnect ATM devices.

The companies plan to make it possible to link SynOptics LattisCell ATM workgroup switches through a WAN comprising StrataCom BPX ATM backbone switches. The BPXs will support a pool of SVC connections that the LattisCells can choose from when switching traffic across the WAN.

The BPX would receive the information needed to support the creation of that SVC pool from SynOptics' Connection Manager, which is a call setup application running on a Unix workstation connected to LattisCell.

Once standards-based signaling for SVCs is finalized, both the LattisCell and BPX switches will support it, allowing users to do dynamic call setup.

Other areas of development include outfitting LattisCell with T-1/E-1 and frame relay interfaces based on StrataCom technology; integrating SynOptics' Optivity net management application with StrataCom's StrataView Plus so users can manage the LAN/WAN ATM network from a single platform; and pushing the development of standards through the ATM Forum.

©NetEdge: (800) 638-3343; StrataCom: (408) 294-7600; SynOptics: (408) 988-2400.

UnixWare

Continued from page 1

ager for the city of St. Petersburg, Fla.

In fact, officials at Novell's Unix Systems Group have approached a number of PBX manufacturers about running UnixWare on their respective voice platforms.

"We've been talking to PBX-type companies in the U.S. and Europe about applications using UnixWare," said Patrick Smyth, director of UnixWare product marketing for the Unix Systems Group in Summit, N.J. "You [would] add a lot of computational power to the traditional voice messaging environment. And you could rely on standard off-the-shelf applications like Oracle [Corp. databases]."

Smyth would not confirm discussions with specific PBX makers. But AT&T's long connection with Unix and its partnership with Novell on NetWare Telephony Services make it a natural candidate.

With NetWare Telephony Services, applications run on a LAN server tied over an Integrated Services Digital Network link to the Definity. Running NetWare Telephony Services under UnixWare on a Definity would obviate the need for ISDN adapters and enable LAN-speed connections between the PBX and workstations.

One net executive who has discussed the idea with AT&T said positioning the PBX as a telephony server would free up the file server from CTI processing chores and minimize the amount of call data passed over the LAN. Running UnixWare on the PBX would also enable users to manage the Definity via the Simple Network Management Protocol, as well as pull call detail information, gleaned by the switch, into a standard database for chargeback and other applications.

Graham Morrison, product leader for network design and engineering at Blue Cross/Blue Shield of Connecticut in North Haven, Conn., said an AT&T local representative broached the idea of running UnixWare on the PBX two weeks ago.

"We wanted to talk to them about their SNMP capability going down the road, and they mentioned UnixWare on the Definity," Morrison said.

"We brainstorm all sorts of stuff," said Art Schoeller, market director for client/server telephony at AT&T Global Business Communications Systems, based here. "I think you're looking at highly empowered [account] teams exploring ideas with customers."

Some analysts question the feasibility of using the PBX as a telephony server, citing the abundance of processing power distributed throughout enterprises.

"You can cook a cake in a microwave oven, but what's the point?" mused Dan Stusser, principle with The Ergotec Group in Seattle.

Users said it is not clear what changes might be required to enable the PBX to support the move. But Novell's Smyth said it would simply involve attaching an Intel Corp.-based computer running UnixWare to a communications port on the Definity.

In fact, the Definity and associated AT&T voice platforms — like Audix voice mail and the Conversant interactive voice response system — all run under Unix.

And Definity users have long complained that the user interfaces for these different AT&T voice platforms, including command sets and keystrokes, are incompatible.

"Each product house manages its own [system], almost as if it were a separate company," said Renee Seay, manager of telecommunications for Advanced Micro Devices, Inc, in Sunnyvale, Calif., and president of the Global Definity Users Group.

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Take the private frame relay net challenge

Key issues faced by Bloomberg in designing a 300-node private frame relay network serving 35,000 end users.

Challenge	Solution
To order digital access lines for each customer from many different telephone companies.	Standardize bandwidth at 56K and 64K bit/sec, and standardize requisition forms.
To equip customer locations with FRAD and DSU/CSU capabilities.	Create data terminal equipment that builds frame relay packets and has built-in DSU/CSU capabilities.
To transport audio and video over frame relay links.	Adopt a variation of store-and-forward technology: Radio and TV clips are sent to customer terminals on request then replayed about a minute later.
To support potential high-bandwidth applications.	Install Newbridge equipment that supports "super-rate circuits" of 256K and 512K bit/sec.

GRAPHIC BY SUSAN J. CHAMPENY

Frame relay

Continued from page 1

The frame relay network is faster and more efficient. Thus, it is better suited for speedy news delivery and charting of minute-by-minute moves in the volatile financial markets. Reynolds has also designed the net, however, to support the kind of multimedia applications that stockbrokers have been lusting after.

For example, using programs and interviews from Bloomberg's radio and television stations, a customer can request to see or hear items such as interviews with financial market analysts and monetary officials in a window on their Bloomberg terminal.

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- Bloomberg Business News, a daily TV program in conjunction with Maryland Public Television

Because most traffic runs on the network at 56K bit/sec — just as in most public frame relay networks — the net is not fast enough to support real-time video and audio feeds. Instead, the audio or video signal is digitized in frame relay format and sent to the terminal in a file transfer, taking about a minute, Reynolds said.

The Bloomberg terminal has a built-in audio speaker, but the video quality is nothing to write home about.

"Today, it's like a slide show," Reynolds acknowledged. "But we expect it to be full motion before long."

Reynolds said she would consider using the bursting capability of frame relay to increase to a T-1 speed.

Key to Bloomberg's decision to go with a private frame relay net is the company's confidence in its home-grown, end-to-end protocol, she said.

"The rule in frame relay is, 'If there's an error, throw it away,'" she said.

"Our end-to-end protocol will recognize [what's missing] and request a retransmission. It's smart enough that it doesn't need all the error checking that X.25 has."

And Bloomberg is implementing the network without the Frame Relay Assembler/Disassemblers (FRAD) usually required to encapsulate bit streams, generated by desktop systems, into frame relay packets. The FRADs are not needed because each Bloomberg terminal is being fitted with a new controller that builds the frames and sends them on their way.

Programming in a method to build frame relay packets instead of using FRADs is not as difficult as it may sound, said Thomas Jones, president of McLean, Va.-based New Ventures Directions, Inc., who consulted with Reynolds on the project.

All that is required is software to put a 2-byte header at the front of each data frame, put an error-check sequence at the end and calculate a virtual circuit number for addressing, he said.

Bloomberg's switch to frame relay means that all of its customers will also move to frame relay, Reynolds said.

"They have to pay for installation of the new digital line — a 56K or 64K dedicated line and some kind of dial backup — but we pay for the hardware," she said.

For the switching equipment at the nodes, Bloomberg tapped Newbridge Networks, Inc., of Herndon, Va.

Each of Bloomberg's 300 nodes has a 3600 MainStreet bandwidth manager equipped with a frame relay card. Some of the nodes with heavier traffic, as well as the network's New York and London hubs, use the heavy-duty 36120 MainStreet Packet Transfer Exchange.

The total cost for the equipment ran a hefty $20 million. And although the customers pay for access lines to Bloomberg's nodes, Bloomberg took on the task of making arrangements with local telephone companies for customers to purchase the lines.

Dealing with the phone companies is the toughest challenge, she said. And keeping up with customer demands may well lead to a serious look at ATM in the future, Reynolds said.

But however it is done, she will not let arbitrary divisions of data vs. image vs. video restrain the applications. Reynolds said, "It's all data to us."

Madge Networks seeks to take token ring to next level

BY SKIP MACASKILL

San Jose, Calif.

Madge Networks, Inc. this week is expected to unveil a new token-ring strategy that includes the introduction of switching and full-duplex capabilities, and addresses ATM integration.

The company will roll out a series of new products by the end of this year and beginning of next that are designed to migrate token-ring users from shared-access nets to switch-based environments according to Madge Networks President Robert Madge.

The first step in Madge Networks' migration to high-speed networking is development of a multiport token-ring switch that will support several local networks and provide dedicated 16M bit/sec links from those LANs to critical net resources such as servers.

The device, which will support between eight and 10 ports, will be based on silicon that Madge Networks is developing in-house. It will come equipped with a choice of high-speed interfaces — either Fiber Distributed Data Interface or Asynchronous Transfer Mode (ATM) — that can be used to connect to a corporate backbone or another switch.

Madge Networks has adopted a cut-through switching scheme that has been embraced by a number of LAN switch vendors such as Kalpana, Inc. With cut-through switching, incoming packets are switched through to the destination port immediately after the address header is checked. Other switches employ a store-and-forward method, in which the entire packet is buffered and checked for errors before being sent on its way.

According to Madge Networks, the latency through the switch using a cut-through scheme is typically 30 microsec, while store-and-forward devices generally offer latency in the 2,000-microsec range.

While cut-through switching offers lower latency, it also presents the problem of propagating bad packets in a network.

But "There is significantly less of a chance of flooding a net with bad packets in token-ring nets because the architecture essentially eliminates the biggest source of corruption: collisions," said Barry Gilbert, president of Gilbert Consulting, in Ashland, Mass.

That same architecture also tempers the need for switching to some degree. "The need for token-ring switching will not be as great as the need for Ethernet switching because even under full load, a token-ring user can get a full 16M bit/sec of performance due to the technology's deterministic nature," said Michael Howard, president of Infonetics Research, Inc., a consultancy in San Jose, Calif.

MADGE

Taylor added that performance for the switch would range between 200,000 and 250,000 packet/sec and carry an expected price tag somewhere between $15,000 and $20,000. It is expected to be available by the first quarter of next year.

The firm will complement the switching capabilities with new full-duplex functionality for its token-ring adapter card lines that will let a token-ring station simultaneously send and receive data at a full 16M bit/sec. This is especially suitable for servers that must handle multiple requests on a continual basis. Upgrading the installed base of adapters to full-duplex will require a software driver upgrade. The feature is expected to be available before year end.

Madge Networks is also planning to develop a line of ATM adapter cards that will support both Ethernet and token-ring LAN emulation. The initial effort will focus on Extended Industry Standard Architecture- and Peripheral Component Interconnect-based cards for servers that operate at 155M bit/sec over Category 5 unshielded twisted-pair wiring.

Field trials on the adapter cards are expected to start in the fourth quarter of this year.

©Madge Networks: (408) 955-0700.

Net management

Continued from page 1

NetView/6000 or SunConnect's Encompass will be able to store and retrieve data in a single database, which will allow users to easily share data across platforms and applications.

Failing that, users will be left with platforms that have different methods for storing and accessing management data, a scenario that results in limited management capabilities and minimal integration between applications and platforms (*NW*, Feb 28, page 13).

IBM, HP and SunConnect are developing separate data repositories, a situation that forces application developers to either pick a platform to write to or develop different versions of their applications for all three. Users may not get an application they need on the platform of their choice.

The goal of the consortium is not to replace the current development efforts of the platform vendors — repository schemas from HP and IBM are expected this summer. Rather, the group is looking for the vendors to continue development of those repositories in an open, cooperative forum, with the hope that all three will ultimately converge.

If IBM, HP and SunConnect continue to develop competing repositories, their platforms won't be successful, said Eric Olinger, product author at Peregrine.

Proposed MIC steering committee

- Accugraph Corp.
- Alcatel N.V.
- Bridgeway Corp.
- HP
- IBM
- ISICAD
- Ki Networks, Inc.
- LEGENT Corp.
- Martin Marietta Corp.
- NetLabs, Inc.
- Peregrine
- Remedy
- SunConnect
- Ungermann Bass, Inc.
- US West Advanced Technologies

"If they have enough of the major players and are real firm, they might pull it off," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. He said the participation of ISICAD, Inc. and Remedy Corp., two influential management software vendors, is key to the group's success.

Two vendors conspicuously absent from the proposed steering committee are Cabletron Systems, Inc. and Tivoli Systems, Inc. observers noted. Cabletron has accomplished much in the way of data integration with its Spectrum platform, analysts said, and Tivoli recently allied with IBM to add object management service to NetView/6000 (*NW*, April 4, page 119).

"They're going to miss something if they don't have Cabletron in there," said Jill Huntington-Lee, principal analyst at Brandywine Network Associates in Cinnaminson, N.J.

Corrigan said those vendors would be contacted.

The consortium will seek technology contributions from member companies and from working groups focused on different areas of integration. The group will document the progress of its work, publish reference code and specifications resulting from this work, and submit it to standards bodies.

By June, the group hopes to hold the first steering committee meeting in August.

Scheme

Continued from page 1

week's federal information technology budget symposium here.

The EDI effort, widely backed by users in government, promises to inject more fairness and competition into the small purchases process. Suppliers have a hard time finding out about these purchases, and government procurement officers only have to get three bids by phone to satisfy the rules.

With all defense and civilian agency requests for quotes up on-line, suppliers linked to a VAN can access the information and bid for contracts electronically using a standardized X12 EDI transaction set. The government has about 80,000 buyers at 2,500 locations, and the Clinton administration wants to give one EDI interface to the private sector.

McINERNEY

The governmentwide EDI effort will resemble the EDI project at Wright-Patterson Air Force Base (see story) in which eight VANs participate, including AT&T EasyLink and GE Information Services.

But sources said there is still internal debate over which ANSI X12 standard the government will back. Some favor the ANSI X12 3040 standard released in December, which defines formats for request for quote, bid, response, purchase order and contract. But the Department of Defense favors the X12 3050 standard to be finalized in July.

Small purchases

According to the Office of Management & Budget, U.S. defense and civilian agencies together spend about $20 billion annually on "small purchases." These purchases cost $25,000 or less and involve 20 million transactions with nearly 500,000 suppliers.

EDI vendors said they hope the Clinton administration can broker peace on the standards issue because using both X12 conventions would spawn interoperability problems and raise costs.

"This would raise the cost of software for users," according to George Chisa, president of Troy, Michigan-based Simplex.

Another issue is which method the administration will back for moving EDI transactions.

The Wright-Patterson hub — a Sun Microsystems, Inc. workstation connected to the Air Force base's automated requisition tracking system — sends and receives EDI transactions packaged in electronic mail.

Some VANs have dedicated connections, while others simply have an Internet address to get E-mail containing EDI messages, said John Rhodes, the project engineer at Lawrence Livermore National Laboratory. The method now used by the VANs for Wright-Patterson purchasing is not based on the ANSI standard X.435 defining EDI in E-mail. If the government proposes X.435 for its electronic commerce initiative, it would boost vendor support.

Government users are enthusiastic about electronic commerce. "You can do things more quickly when you're doing them electronically," said Air Force General Thomas McInerney.

Air Force flies with EDI

Wright-Patterson Air Force Base began electronic purchasing just over a year ago and now has first-hand knowledge of its benefits and pitfalls.

Wright-Patterson posts all small purchase requests for quotes (RFQ) on the first multivendor electronic data interchange hub ever deployed. Eight value-added nets (VAN) attached to the hub then send information to subscribers and suppliers wishing to bid. The increased competition among bidders has saved Wright-Patterson $850,000, but managers caution that the government will have to keep a tight rein on quality control to make EDI procurement a success.

Some VANs do better than others delivering electronic mail containing EDI RFQs and EDI purchase orders issued by the base, said Peg Arnold, project manager on the base's Government Acquisition through Electronic Commerce (GATEC) program.

One VAN, which she declined to name, lost more than 500 contract awards sent to winning bidders. The problem was eventually discovered, but the supplies were received late. A more common problem is that suppliers do not trust EDI and keep sending the same message over and over.

Also, while 100% of Wright-Patterson's small purchase needs go up on-line, only 70% of the procurements are awarded electronically. The reason: government buyers think it is easier to list their RFQ in an incorrect category to get spending approval. Since the VANs usually send tailored procurement information for specific suppliers, suppliers sometimes do not find out about the RFQ.

Some suppliers have tried to pass themselves off as buyers for Wright-Patterson, Arnold added.

But the advantages are clear. Wright-Patterson now has 1,200 suppliers on-line and has made more than 30,000 awards through GATEC. "It's been a real boon to small business," said Arnold, noting that more than 95% of the awards go to small businesses competing directly with the bigger guys.

BY ELLEN MESSMER

LANshark bites with messaging support

On the heels of Banyan Systems, Inc. announcing its new back-end messaging engine, LANshark Systems, Inc. will release its revamped electronic mail front end that supports Intelligent Messaging III.

Sharkmail III, which will ship later this year, will run on VINES 5.X and use Intelligent Messaging III as its mail server. The new clients let users share mailboxes and sort their messages.

The product includes dynamic messaging capabilities that let users create user-defined forms, self-aware messages that automatically process themselves or launch applications and automated work flow processes.

Sharkmail is bundled with LANshark's Mail Expert, a server-based automatic mail rules system that lets a user specify how messages are handled. Using a dialog window, a user can specify that messages be moved to a folder, deleted or forwarded. Mail Expert is active even if the client machine is turned off.

Beyond, Inc.'s BeyondMial has a similar rules-based routing capability, but it runs on the client. Banyan, when it acquired Beyond earlier this year, said it planned to integrate server-based rules routing into future versions of Intelligent Messaging.

Scott Sharkey, president and chief executive officer of LANshark, which is based in Reynoldsburg, Ohio, said Sharkmail clients will support the server-based rules routing in Intelligent Messaging when Banyan ships it. "But for the meantime, our service will be up and working," Sharkey said.

Sharkmail III will ship in early fall and cost $1,495 for as many as 250 mailboxes.

For more information, call LANshark at (614) 866-4877.

BY CHRISTINE BURNS

Banyan ENS

Continued from page 1

plans, which are scheduled to be delivered at the Association of Banyan Users International conference.

Banyan first made its directory and other VINES services available to NetWare 4. users last July when it shipped ENS for NetWare 1.1. That version allowed VINES and NetWare 2.X and 3.X systems to talk to NetWare 4.X systems outfitted with Novell's NetWare Directory Service (NDS), which is not backward-compatible with the earlier versions of NetWare.

ENS for NetWare 1.1, which was released last June, allows 2.X, 3.X and 4.X NetWare clients to talk to each other. However, this solution did not give an administrator using ENS for NetWare access to the enhanced features of NDS such as its replicated database of information about every network component.

The new version of ENS for NetWare will support NetWare 4.X clients and servers directly through NDS, letting administrators manage the NetWare 4.X machines using the advanced features of NDS.

"Before, you had to use Banyan's StreetTalk to map services and utilities through the NetWare binderies, whereas now they've ported that mapping directly over to the NDS, making administration a lot easier," said one Banyan reseller.

Stan Schatt, service director for LAN research at Computer Intelligence InfoCorp, Inc. in La Jolla, Calif., said predicting the need for this product is difficult. "Banyan is trying to support a moving product because Novell is scrambling to fix problems users are having migrating to NDS," Schatt said.

NT CONNECTIVITY

On the Microsoft connectivity front, up until now Banyan has had a wait-and-see attitude toward NT. And although sources say Banyan will not announce when it will ship ENS for NT, it will talk about its commitment to deliver the product.

ENS for NT will enable NT users to communicate with users of VINES, NetWare and Unix-based platforms through one set of directory, security, messaging and management services.

"I think committing to Windows NT would be the right direction for them. Who else is offering a single source of integration for VINES, Unix, NetWare and Windows NT systems? That's certainly not coming from Novell or Microsoft," said Randy Bradley, chief technical officer at NetPro Computing, Inc., an independent software developer in Scottsdale, Ariz.

One of Banyan's key connectivity services is its messaging engine. The new version, Intelligent Messaging III, comprises a client/server database that reportedly will make it easier for application developers to write distributed mail-enabled applications. It also contains several ease-of-use features for end users trying to send electronic mail throughout an enterprise.

According to Robert Sakakeeny, a senior consultant with the Boston-based research firm Aberdeen Group, Inc., Banyan will also announce BeyondMail 2.0. This is the first version of Beyond, Inc.'s front-end E-mail package to ship since Banyan bought the company earlier this year. The primary enhancement is support for Intelligent Messaging III.

"I think the Intelligent Messaging back end and the BeyondMail front end is a great combination that's going to be easily scalable to support future mail-enabled applications," Sakakeeny said.

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